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MS THESIS

Theme: E-learning systems and Khazar Learning Network

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Abstract

Education is base of development of society and it have been for everytimes and will continue to lead all sectors . Every age form of education changed . Science which once is given at madrassas today is learning at universities. In additional private courses , training given by companies are part of traditional education. On the other hand with the invention of the World Wide Web (WWW) started to develop new ways, such as tools and applications for publishing teaching data in the context of the Web. This form of education is called as 'e-learning' and business companies , educational institutions like Oxford , MIT have began use it . The second impact of invitation of WWW on education is to push people more individual learning. However e-learning systems have weak points like not to allow social interaction and practical skills , e-learning is waited to be leading form of education in future . I did this thesis because I think that we have to increase research and works on e-learning systems to get future . Other reason is to create Khazar Learning network I wanted education platform supports individual works and use competitive side of social media user on education .

Referat

Təhsil cəmiyyətin inkişafının bazasıdır və hər zaman digər sektorların inkişafına yol açmışdır. Hər dövrdə təhsil fərqli bir formada özünü göstərmişdir . Bir vaxtlar mədrəsələrdə öyrədilən elm indi universitetlərdə verilir . Bununla yanaşı şəxsi kurslar şirkətlər tərəfindən verilən təlimlərdə bu günkü əsas təhsil formasının bir hissəsidir . Digər tərəfdən World Wide Web (WWW) inkişafı bu sahədə yeni yollar açmış , öyrədici məzmunlu materialların web kontekstində dərc edilməsi üçün web aplikasyalar , alətlər yaradılmışdır. Təhsilin bu növü ‘e-öyrənmə’ adlanır və şirkətlər , MIT , Oxford kimi təhsil ocaqları artıq bunun istifadəsinə başlamışdılar. Baxmayaraq ki e-öyrənmə sistemlərinin sosial əlaqələrə icazə verməməsi və praktiki bacarığın inkişafını dəstəkləməməsi kimi çatışmamazlıqları vardır amma bu sistemlərin gələcəyin aparıcı təhsil forması olması gözlənilir. Düşünürəm ki bu sahədə daha çox tədqiqatlar aparılmalı və işlər gormülməlidir və bu tətisi yazmaqda əsas səbəbim budur. Xəzər Öyrənmə Şəbəkəsini yaratmaqda başqa bir səbəbim isə individual işləri və sosial medianın rəqabətçil tərəfini dəstəkləyən bir təhsil platformu qurmaq istəməmdir.

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INTRODUCTION

My master thesis is about e-learning systems which allows institutions give education from far distance and without time limits . Also students can use benefits of e-learning when they can't come real time lessons or have some social problems . There are also financial advantages that to organize online lessons is cheaper than traditional education and more much students can join virtual lessons without location and placement problems. Necessary part of thesis is Khazar Learning Network which I created as example of such kind of systems and most of counted technologies are adopted here .The thesis consist of three chapters, conclusion and appendix .

The first chapter is about current e-learning systems . There is written about definition , history and future of current e-learning systems . Benefits and disadvantages of the systems are also shown and which technologies and standards are used is counted .

The second chapter is related with architecture of Khazar Learning Network . I have written about database ,tables ,their connections with each others and structure of tpl systems which it allows developers to upgrade system and makes faster website .There are list of technologies which I have used like smarty to create the system.

The third chapter is result of the work . There are list of interfaces and pages of Khazar Learning Network . At the first part is written about main interfaces like entrance and home page. The second part of the chapter is structure of interface allows users to add and share tests , articles , materials and announces. Communication pages like notifications , messages are topics of next one . There is also user profile and setting pages , they have complex structure and important to personalise Khazar Learning Network for users.

I INTRODUCTION TO E-LEARNING SYSTEMS

Nowadays, information technology is widely used. Opportunities of online learning systems are used in schools , universities and for staff training in different areas. Distance Education is popular e- learning system which students can join lessons at a certain distance. In such kind of systems education or training is organized with special software packages with help of , multimedia disks , television, the internet networks . Online learning systems look like distance education but have more opportunities .

A example of online learning systems there are a lot of available software packages. E-Learning Server 3000, Lotus Learning Space, xDLS, Distance Learning are some them .

Such kind of softwares is divided to student and teacher parts . In the software for students users can read articles , watch videos and do task about lessons with accessing teacher side . In teacher side different software is used , with this software teacher can upload e-learning materials to server .

Today web and mobile applications are more popular than old fashion e-learning softwares . People can access them in every place where there is computer has internet connection and any kind of installation is not required . Some of websites give similar service to users with different teachers , trainers . Www.openculture.com , ww.academicearth.org , www.oyc.yale.edu can be counted as example for them . Such kind of sites are focused to automation of traditional learning systems and we have to consider that they are supported by leading universities as Oxford University , Yale University , Cambridge university etc . But some web sites like www.codeacademy.org , www.stackoverflow.com, www.w3schools.com are more popular among internet users . Main reasons is they give users different and simpler services , bring fun to traditional education with graphics and live games and supports

users with networking that students can help each others when someone need help . Also some of them have mobile application version .

Is based on the principle of Distance Education students to learn independently. In this training area teacher and students are separated by time and distance , at the same time they can also keep in touch with telecom equipment of system providing e-learning .

Any e-learning education program can be organized in any way. These systems look very simple: student an access education materials with the help of the computer network. There are also tasks related the materials so students can improve their knowledge and skills . After preparing task students send filed documents to teacher and teacher receive answers , added next tasks , this process continue until end of course .Possibilities of the computer technology can be used as teaching materials . So in some e-learning systems students answers is checked by program , lessons is explained with another interactive program that there is links to videos about topics of lesson . Of course any course can be taught without any teacher but using of such kind of program decrease required time and staff .

Following materials can be used in e-learning education:

- Electronic publications
- Conventional computer learning systems and multimedia options
- Scientific - information, audio materials
- Scientific - informational video materials
- Electronic Libraries and allowing access to the outside
- Computer networks .

1.1. Definition of e-learning Term

E- learning term is used as synonymous with web-based learning, Internet-based training, advanced distributed learning, online learning, and open flexible learning.

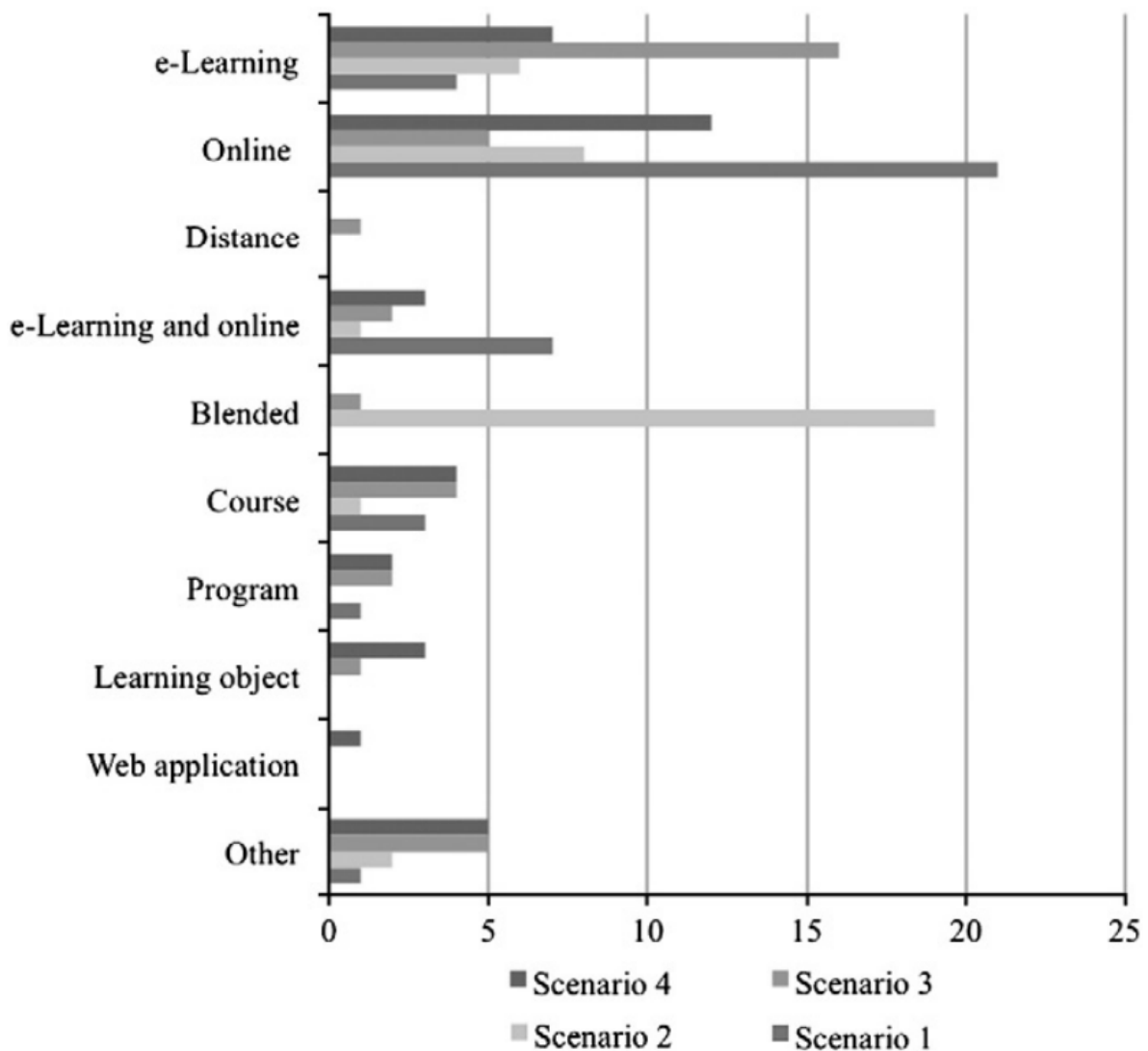


Figure 1.1

Figure 1.1 illustrates the number of respondents who related a particular scenario to either a learning environment or a learning resource (12,134) .

There are three fundamental criteria as base of e-learning .

1. E-learning is networked, making education available for distribution and sharing of information.
2. E-learning is delivered to the end user via a computer using a standard internet technology .
3. E-learning focuses on the wideview of learning that is beyond of the traditional education.

‘The concept of e-learning systems is around for more than decades and is one of the most significant developments in the IT industry. Recently e-learning systems have been used in teaching and learning in many universities that resulted in changes in education process in those institutions. The growth of Web applications has made e-learning systems as an important instructional medium in universities’(2) .

‘E-learning systems offers a lot of benefits to students and instructors. E-learning systems provide e-learning platforms that use the Internet as a delivery mechanism to allow students from anywhere to access a number of learning tools such as discussion boards, chat rooms, course content management, tests, grade, etc. E-learning systems assist instructors in managing the ordinary tasks. E-learning systems as powerful integrated systems, these systems support a number of activities performed by instructors and students in e-learning. For example, instructors can use e-learning systems to develop course notes, tests, to communicate with students, and to grade students academic progress. E-learning systems can be used to avoid publish materials about course’(2) .

A more developed form of e-learning system is virtual universities. The virtual university is educational free institution which doesn’t depend on any educational institution. Their teaching methods support distance learning with - I virtual university services. Their differences is they don’t have educational

programs and courses, as well as teaching building, dormitories, rooms and assembly halls. Canada Open University, the Netherlands Open University, Fern University (Germany), the British Open University are leading members of virtual universities.

1.2. The history of e-learning

The term "e-learning" has been used at a CBT systems seminar in 1999. Other words is searched for accurate description such as “online learning” and “virtual learning”. However, the principles of e-learning have been documented throughout history, and there is evidence that early forms of e-learning existed as far back as the 19th century.

History of e-learning systems are parallel with history of technologies which is used in e-learning .“Automatic Teacher” is invented by Ohio State University professor Sidney Pressey in 1924, it was the first testing machine in electronic learning. The first try was not successful but students could test themselves with help of the “Automatic Teacher” .

Harvard professor BF Skinner invented the “Teaching Machine” in 1954 , it was planned for schools. The teaching machine was a mechanical device which is designed to manage a curriculum of programmed instruction.

In 1960’s , important roles of computer in education had been said , every intended technology opened new doors in e-learning . Organizations , universities and schools focused to bring computer as learning tool in their systems . In 1963 , Schools’ Committee of The British Computer Society are established to develop computer roles in schools . In 1965 the first computer is used in english school . In 1967 , The National Council for Educational Technology (NCET) was established.

On October 29, 1969, the first electronic computer network, the ARPANET, was established . It was used between Leonard Kleinrock's lab at

UCLA and Engelbart's lab at SRI. In October 1972, A large, very successful demonstration of the ARPANET is at the International Computer Communication Conference (ICCC). This was the first public show of this network technology to the public . In 1972 , electronic mail also was introduced . Networking of computers was the second important step after invitation of computer in history of e-learning.

In 1970s online learning was more interactive. In Britain the Open University was using advantage of e-learning. Their system of education was primarily focused on learning at a distance. With the internet the Open University offered a wider range of interactive educational experiences as well as faster correspondence with students via email etc.

In 1990's , the first digital native appeared . In 2000's , e-learning systems was adopted by business , companies began to organize training with via e-learning . In 2010's social media is part of e-learning systems , this time there is different that independent teachers publish articles , makes video lessons with help of social media .

1.3. Advantages of E-learning

E-learning systems include following advantages:

- E-learning is effective and . If done right, it can make great results by decreasing costs and improving performance. Also, unlike a one time classroom session, the e-learning course is available for everyone. This includes the static e-learning lesson as well as any ongoing conversations in networked websites like youtube. There are different advantages for trainer , organizations and students .
- Some of the most advantages to the trainer or organization are:

- Decreased cost with salaries of staffs, meeting, lesson room rentals, and student travel, lodging, and meals are directly quantifiable.
- Learning times is average of 40 to 60 percent reduced.
- Consistent delivery of content is possible with asynchronous, self-paced e-learning.
- Expert knowledge is communicated, but more importantly captured, with good e-learning and knowledge management systems.
- Proof of completion and certification, essential elements of training initiatives, can be automated.
- Particular advantages of e-learning to learner include:
- Offline lessons are available for every time , if student doesn't understand anything he/she can repeat the lesson or if student forgot something after course he/she can refresh knowledge .
- Usually learning times can be different for students , in traditional educations they can delay lesson . In e-learning this problem is removed with self-pacing.
- Interaction with other students can be stressful for older people and came from different cultures. In e-learning courses students have not to be interact each others , they are supported with individual lessons .
- Students can attend lessons in anywhere and anytime . Usually working hours can be some with lessons or accommodation prices can be problem for students in traditional education but it is removed in e-learning .

The list is made by help of www.e-learningguru.com (6).

1.4. Disadvantages to the Learner

E-learning systems include following disadvantages:

- Technology issues of the learners which they are most commonly unavailability of required technologies.

- Social and cultural interaction is reduced. The elimination of face-to-face learning and suppression of communication mechanisms such as body language are part of this potential disadvantage
- Weak point of e-learning system that student can't gain practical skills because they can't access any laboratory . This problem doesn't appear in studies practical skills don't matter like history , philosophia , economy . But it is real for medical , chemistry and other education fields require experiments and observations . This problem can be solved with help great graphical softwares . But development of such kind of softwares is not so easy . For example for chemistry software need a database has information of all elements and have to compute all reactions , it is nearly impossible , results of reactions can be unpredictable . The second is that a supercomputer is required to simulate such kind of computing and its results . Whatever today using of such kind technology is far , we can expect it for next years because of improving of computer technology .

1.5. Standards

Organizations working on IT section are close co-operation to develop the standardization of learning technologies . Leading role among them belongs to IEEE P1484 LTSC (Institute of Electrical and Electronic Engineers, Project 1484, Learning Technology Standards Committee) , ARIADNE (Alliance of Remote Instructional Authoring and Distribution Networks for Europe) , IMS (Educom's Instructional Management Systems) , Amerika Müdafie Departamenti ADL (Department of Defense Advanced Distributed Learning) .

1.5.1. IEEE LTSC standards

IEEE LTSC groups target to develop technologies , production methods for components of e-learning systems and to create guidelines and technical standards. Learning technology standardization organization (LTSC) IEEE is assigned to standardization online trainings by the LTSC (Computer Society Standards Activity Board) community. Standards offered by LTSC is known as candidates to international standards and investigated by ISO / IEC / JTC1 / SC36 (International Standards Organization / International Electrotechnical Committee / Joint Technology Committee 1, Information Technology / Learning Technology).

1.5.2. IMS Standats

Development of Internet and the World Wide Web technologies are changing level of e-learning system1.5.3.s . Aim of IMS Global Learning Consortium, Inc. (IMS) is to make available to use education materials , observation of student development and success .

IMS has two main target: defining technical standards of software in education and application of IMS standards for worldwide products and services . IMS is the education, commercial and government global organizations. There are following reasons whtt IMC are the most useful in online education systems. IMS specifications are focused on its practical application and written in XML. IMS specifications have always practical guidelines about using of it with examples. But other organizations specifications only consist of with images .

The standard has been adopted by the US and Europe's leading organizations. IMS are defined as worldwide standard of exchange of resources

between among distance education institutions. All IMS specifications are available to everyone.

1.5.3. IMS project

The project consists of 29 industries and educational institutions which they want to establish standard packages in 6 areas: profiles , metadata , content , tests , management , complete .

The project combines the technical achievements of distance education and makes their specification in the XML format . Many government and profit companies involved in distance education accept this standard and now the standard format is known as the exchange of data between the academic institutions as well.

Information management model (IMS Enterprise Information Model) determines data structure of using connection among educational systems using resources of some educational institution. This model supports these program classes:

- control of the educational process;
- control over the students;
- control over libraries;
- human resources management .

IMS supports four basic process which interaction of the local administrative system with education system is required:

- Storage of personal data. The data is stored in educational institutions and is using real e-learning systems .
- Groups Management . Management and storage of information about student groups.
- Registration Management. It refers to the operations about determination of instructors and teachers for organizing of lessons.

- The latest results of the processing. The process consist of compiling and storage of the results of the teams (rankings, course completion).

Specifications for metadata are description of data on scientific resources.

They make easy to search for scientific resources. IMS Metadata standard consists of 3 parts:

- IMS Core;
- IMS Standard Extension Library;
- IMS Taxonomy and Vocabulary Lists .

IMS specifications of metadata is agreed according to the IEEE LOM standards . But there are much more elements in IEEE LOM metadata standard, and to support the standard is very difficult for many software manufacturers . LOM IMS divided into two groups and they have their metadata elements: Core and Standard Extension Library consists of 19, Standard Extension Library consists of 67 elements.

Content specifications determines the composition of the interactive, independent materials. The specification determines additional information which help do the following operations on the content :

- to create interactive teaching materials for authors ;
- to manage and distribute materials for operators ;
- to learn the material and to work together for students.

IMS Q & TI (Question & Test deadlines) specifications have been adopted by many manufacturers all distance education systems, and almost all of them are using this format for the exchange of test materials and some of them use it to storage test in their system.

The main feature of the specification is separation of material description from their questions, the ability of a wide range of configuration of testing , dynamically creation of new question from existing answers .

The specification allows you to describe the different models for evaluation and to use non-standard material. This model is suitable for the organization of the system of testing for the following reasons:

- Inheritance of the model elements.
- Configuration of testing are separated in test materials.
- Correct answers are stored in conventional signs and it gives you the opportunity to mark the questions for large partitions easily.
- His description of the type of questions the logic of separation method.
- Separation logic questions from their description methods.
- The model is described in XML.
- Q & TI specification enables a gradual transition. IMS supports simplified versions of the specification.

1.6. Technology

Currently, opportunities of information and communication technologies are using in online educations. E-learning systems include following types of technologies:

Types of Technology	Description of Technology
Distribution Technology	Main aim of this technology is to provide distribution and exchange of information to allow e-learning to take place. Most used way is the Internet/Web, sometimes CDs or other distribution technology. Usually the term “online” is used in describing of e-learning because the focus on the use of internet.
Content/Course Management Software	It focuses to make available simulate the experience of a classroom observation of student development and

	success while studying both on-campus and from distance.
Communication and Collaboration Software	It is simulation of virtual workspace in which provides teacher and students interact with one-to-one, one-to-many, and many-to-many in order to learning together anytime and anyplace. Streaming audio/video ,e-mail, discussion database are examples of asynchronous/online anywhere tools. Chat, Audio/Video conferencing, instant messaging can be counted as example of synchronous/online live (real time) tools. It can be organized with help of MUD.
Course Support Software	Electronic libraries and softwares for math, analyses can be example for this technology. Usually softwares supports specific courses are used.

Table 1.1

Table 1.1 shows types of technologies included in e-learning systems (1, 3161).

E-learning is divided as two forms of contemporary learning – Web-based and computer-based learning. Web-based learning represents learning conducted via Internet or local network of university or company and computer-based learning includes only learning that technology on a independent PC . Digital Libraries , Multi-user Object Oriented , Multi User Domain , Interactive Relay Chat, WWW technologies are leading tools of web-based learning .

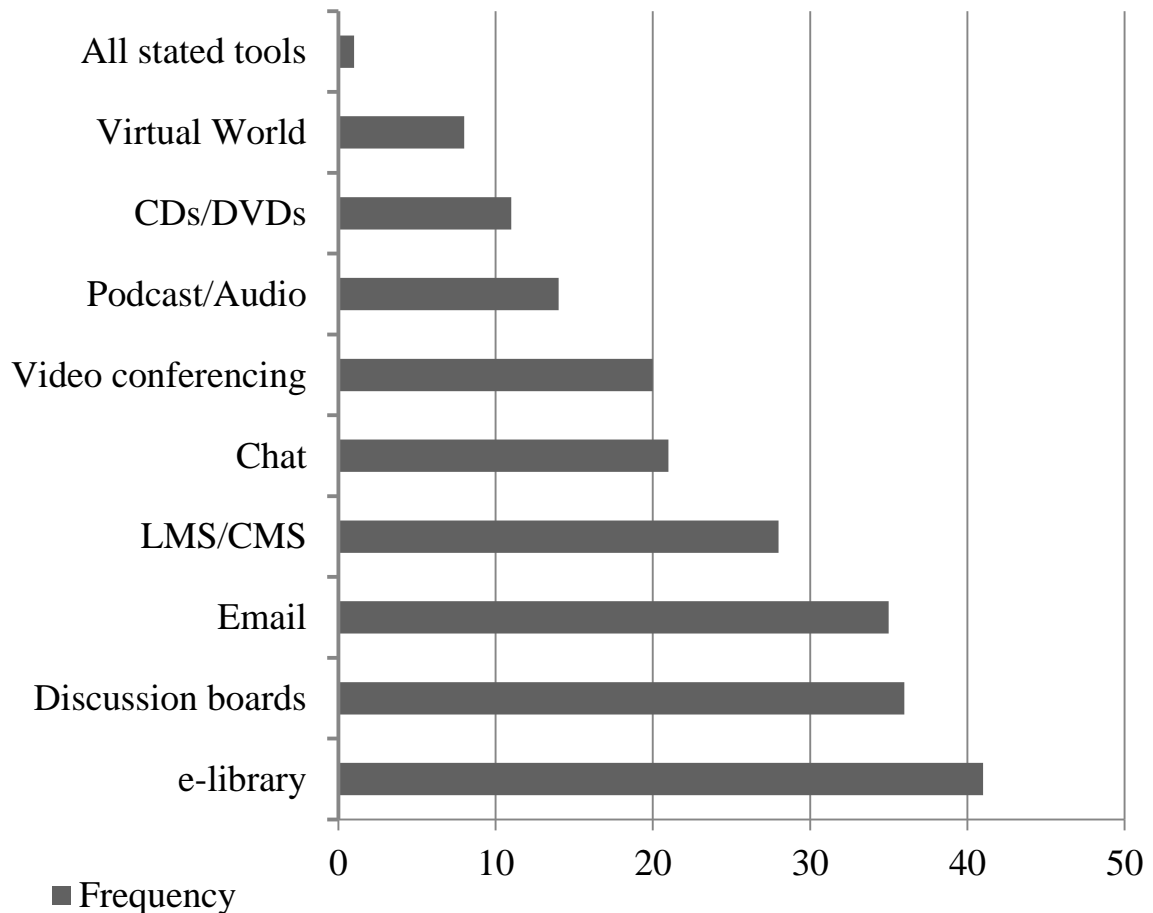


Figure 1.2

Figure 1.2 illustrates the different technology tools and/or techniques of learning environments and the number of respondents who reported that they participated in environments with such. Digital libraries (10,133).

The first member of e-learning system is digital libraries which began to be used in the early 1990s, continues to grow and expand. In general, goals of digital libraries are discovery, and use of the items in the repository. ‘Digital libraries are essentially large databases of resources and their associated metadata, the library collections are generally only available via the Internet. Some libraries actually keeps their own resources for users to directly access and are referred to as resource repositories’(4). National Library of Virtual Manipulatives, NLVM.usu.edu are good example for such kind of libraries . Other libraries serve as clearinghouses from which using them for searching

may be more efficient . This second type of library is like a web search engine that gathers data about the data in different websites but makes searching much more convenient for the end user. The most popular example is google which has own online book repositories and has search engine serves as a clearinghouse .

Today educational digital libraries are accessed from nearly everywhere in the world via the Internet and Web, it is also very difficult to gain access to the wide variety of instructional contexts in which the digital holdings used or even how they are presented to students.

1.6.1. World Wide Web (WWW)

It is hard to imagine e-learning systems without WWW technologies. Advantage of this technology is that expensive equipments is not required like TV systems , training courses can use free application or make their special web applications . WWW has unlimited opportunities like text , audio ,video transfer . Leading training centers develop special games via html , javascript . They want bring to fun and competition to education with such kind of games , also target to help students learn quickly and forget lately .

1.6.2. Multi-user Object Oriented (MOO) technology.

MOO is the system makes connections available in real time via internet. With help of MOO user's computer turns to the principal (host) machine has virtual rooms (virtual rooms) . There are other people simultaneously connected to the same basic machine. The advantages of MOO are the ability to create virtual objects. Other tool - a virtual tape making available to record what is happening in the room. MOO organizes convenient service to arrange lessons at

the same time. An educational MOO has an academic theme . Teachers can use tools of MOO communication tools such as internal e-mail, newspapers, documents, blackboards with the goals. Most MOOs are not designed with academic purposes in mind, and some are simply not suitable for young people. The following successful educational MOOs are suitable for learners of high school age and older. MOO does not require high-speed lines with 9600 Kbit / sec high-speed modems can work well. There are many e-learning courses are organizing trainings sessions with help of MOO.

As a negative point MOO doesn't provide interactive lessons and some teachers want to control student behavior that inevitably occurs. Teachers should help students create personally tasks before the MOO is accessed.

1.6.3. Multi User Domain (MUD) technology

MUD technology are much like MOO technology. Users can create a group and individual meetings with the help of MUD technology. Some MUDs are adventure games , others are educational , and others are simply social. Users create a character when they join to a MUD , in e-learning systems instructor do it and system continue to update user information while course . 'Many MUDs continue to be entirely text-based, some new MUDs use virtual reality settings and you can see the characters. However, the focus is on the exchange of text between participants who are logged in at a particular time. There are a number of variations on the MUD, MUCKs, and MUSHes etc' (5).

1.6.4. Interactive Relay Chat (IRC)

IRC technology is software which users can send informations in form of text and receive . IRC systems work with virtual chat rooms , every room has own moderator that the room is opened and managed by the moderator also the moderator can stop , delete the room and control privacies of users . Some IRC systems support to create a private channels and organize individual consulting , tests , it makes IRC technology more convenient for online education.

‘Users need Internet connection to use Internet Relay Chat (IRC). After the Internet connection is in place, a software package allows users to connect to the IRC server's special computers reserved for interactive conversations. MIRC is the most popular IRC chat software for PCs which is a shareware program that puts IRC servers and advanced IRC features as close as the click of a mouse. “Microsoft Messenger“ , “Pirch“ , “Homer“ , “Ircle“ are good examples for such kind of softwares. Any of these programs allow users to log onto IRC servers, join channels, and exchange live conversation. Some of the programs support such advanced features as sound files or color coded text. Another useful feature, supported by some software programs, is URL "catching." This feature will collect and/or automatically display any properly typed URL. This can be especially useful when a user wants to follow a professional discussion or any other seminar-type of chat. All URLs typed can be logged into a database for inspection later’ (5).

II STRUCTURE OF KHAZAR LEARNING NETWORK

When I develop Khazar Learning Network , I have chosen PHP as server-side scripting language because it is faster than other languages and useful for text processing has The PHP Data Objects (PDO) makes works with database more simple . There is MySQL (My Structured Query Language) as database provides access to multiple users at the same time with its robust architecture. Also javascript have important role that I couldn't make pages doing dynamic functions without reloading page . I have used HyperText Markup Language (HTML) and Cascading Style Sheets (CSS) for making user friendly interface . I have integrated Model View Controller (MVC) structure in Khazar Learning Network. The main advantage of MVC is to give chance to develop project on different stages , at the same time it make easy find errors and help to fix the errors Usually it is design pattern for desktop softwares but there is available PHP frameworks which use MVC pattern. For e.g. CodeIgniter, CakePHP, Symfony . I didn't use any web framework because they don't let me control full design . In my project I have desIghned MVC structure with pages which some pages used as view , some pages as model , some pages as controller pattern. I integrated Smarty as view part of structure that php files analyze get and post datas , send variables to tpl files and in content_main.tp system choose which page have to displayed and built view of the page .

2.1. Pages

There are three kind of pages . The first kind of pages are view part of my MVC system , the second one is model and last one is controller pages. Model pages are standart class pages and sometimes other pages can do this role , for example some functions of mysql php return result as an object and controller pages send it to view pages .

2.1.1. Controller pages .

Users have not access these page directly and they have to be invisible . Their role is to analyze post and get datas which is sent by other pages like signin.php or message.php and select suitable functions form model classes and if data is not from ajax function redirect view classes . There is three controller php file which they are check .php , controller.php , message_controller.php and a .htaccess file has important role for view part of my MVC system .

2.1.2. Check.php

I use check php for process like ‘login ‘ , ‘ logout’ etc . and their functions . There are four function , for signup , signin , logout and reset functions for email and password .

2.1.3.Controller.php

Controller.php is related with nearly all of view pages . This page working with 39 kinds of data . They are separated two types , the first type of datas is came from ajax functions of static forms , the second datas is came from dynamic parts with ajax functions. To determine type of data is necessary because system decide with these datas which page will be redirected or not redirected after working .

2.1.4.Message_controller.php

This file have some function with controller.php . I use message_controller.php for dates came form message.php . It allows system to be faster because controller.php maximum 39 and minimum 2 time check tupy of data to determine what have to do and it causes delaying is big problem for process need speed like chat . Message_controller.php is perfect solution for losing time for checking which there is only check that therese is request form message.php or not .

2.2. Model pages .

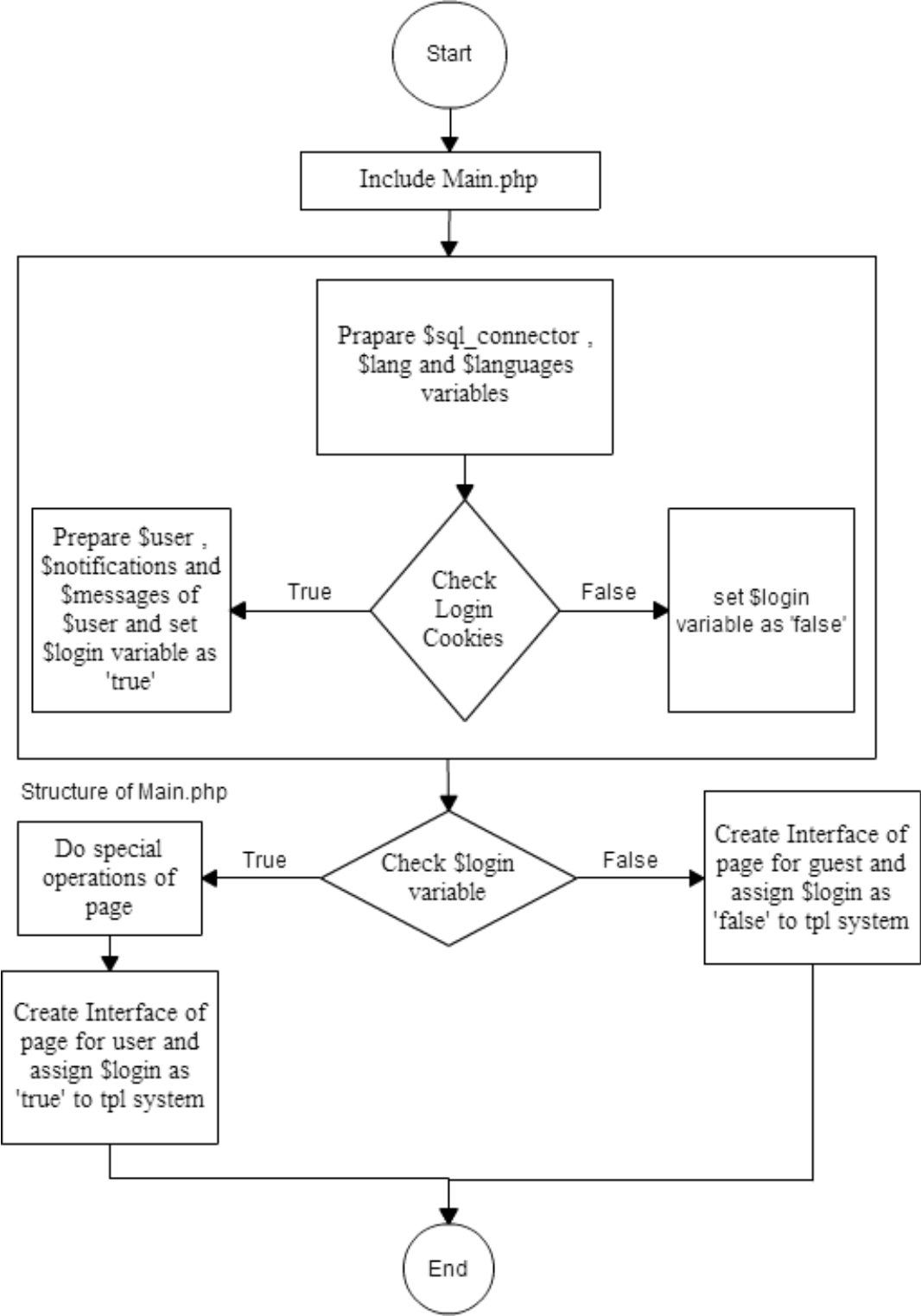
Model represent knowledge of system , it can be a xml file or database . In my project mysql.php is model component of MVC . There is Sql class in mysql.php . It allow access for the data to be viewed and analyzed in controller part . With other word this class is the bridge between the view component and the controller component .

Sql class have a constructor class and a lot of ordinary functions . Constructor function makes connection between mysql database and Sql class which other functions use the connection . Others is separated select , insert, update and delete functions . These class working with suitable sql scripts at the same time select functions detect wrong datas which came from controller component and prevent it with redirecting to error.php . There is also Lin and getLocationInfoByIp functions . Lin reads given text and detect words have link patterns and turns tme to Html link tags . getLocationInfoByIp function return array which contains city and country of users . These data is necessary to make more personal site for users .

2.3. View pages

There are total 29 pages . All of them include main.php because they have common algorithm and common objects like \$user , \$sql_conneceor , \$lang in main.php . Main.php checks there is user or not and send \$login variable to value pages about it and every page check \$login is true or not . If it is true , interface for users is created , but some pages like registration.php direct user to home.php . If there is not registered user pages creates interface for guest , in

some pages like about.php , privacy.php only header is changed .



Graphic 2.0.1. General algorithm of view pages.

2.4. Structure and importance of main.php

Main.php is the most important file for architecture of Khazar Learning Network , it is located in 'includes' folder . All of view pages have to include main.php because there is necessary objects , arrays and other valuables are gained and distributed to pages when the file is included . With this way I can avoid messy code and other advantage is I have to make changing in algorithm of system once . On the other hand I would have to change all pages when I want update or add new codes .

There is \$sql_connector which is object of sql class . This object is bridge between view pages and database . Also \$smarty object is created ,its compile_dir and template_dir variables are setted in the php file . Via \$smarty view pages can send variables tpl files . \$smarty.compile_dir is keeping address of directory which views will be compiled here and \$smarty.template_dir has folder which there are tpl files using for compiling .

Password and Login cookies is checked with checkUser function . If there is registered user giveUser() runs and return information about user . User notifications and messages and their counts are sent to header.tpl . \$login turn to true which other php and tpl files check this variable . In opposite case only \$login assigned as false.

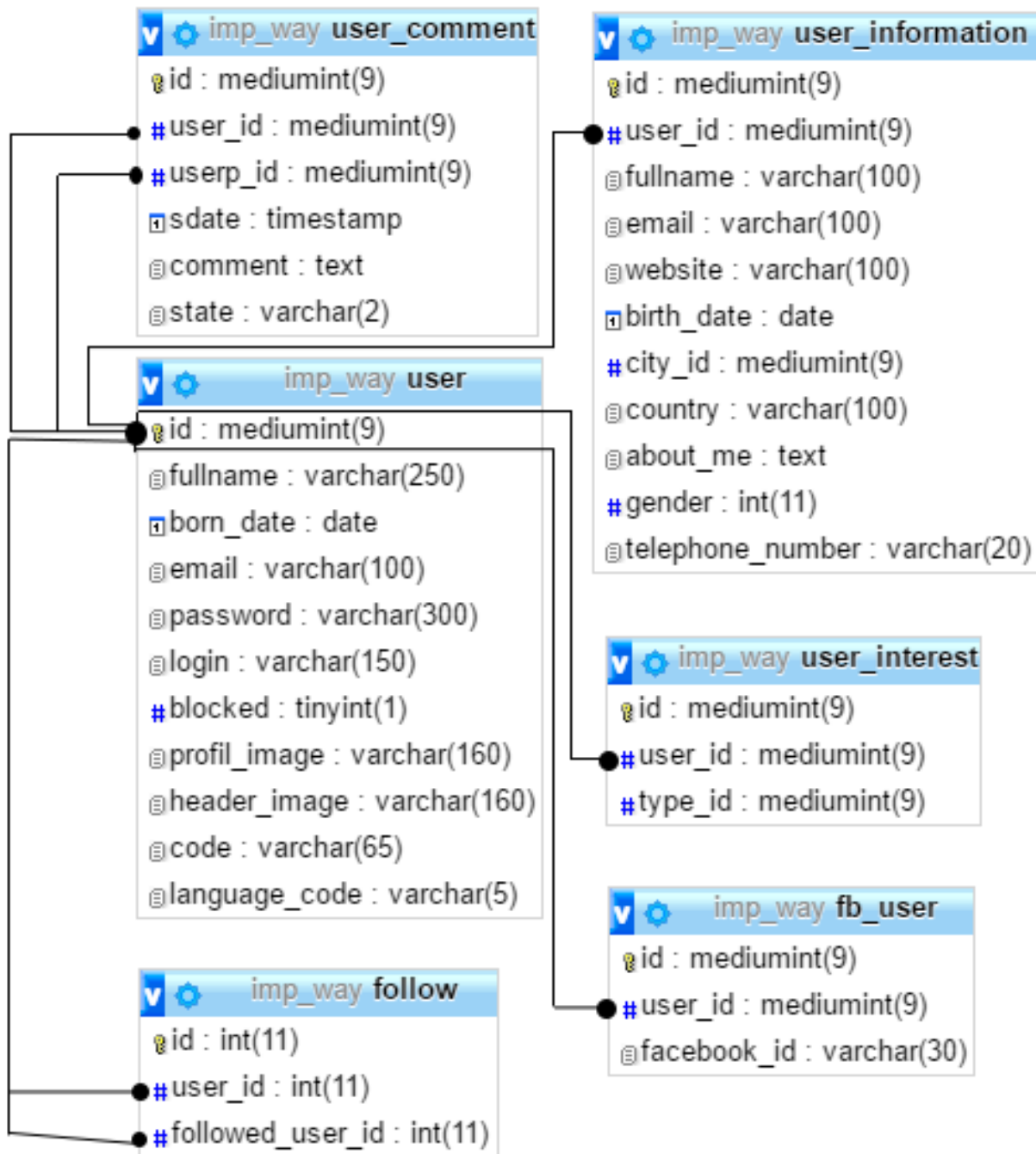
Another important system valuables are \$languages keeps available languages and \$lang which is array of translated words is used Khazar Learning Network. Whatever running of main.php is unusefull alone , all view pages depend on it .

2.5. Architecture of Database

Database structure of Khazar Learning Network is complex because when I designed database, I made tables like objects. There are 2 main table, which they are user and action tables. All tables are related with one of the two tables.

User tables keeps list of user. There is technical informations of users. Login, password, email, code are column names of user table. User_information, user_comment, user_interest, notification, news, message, contact, action depends on only user table, they have at least one user_id column. User_information keeps personal, they are full name, contact and location informations, they used in user profile. User_interst keep data about user favourite types, there are user_id and type_id columns. User_comment

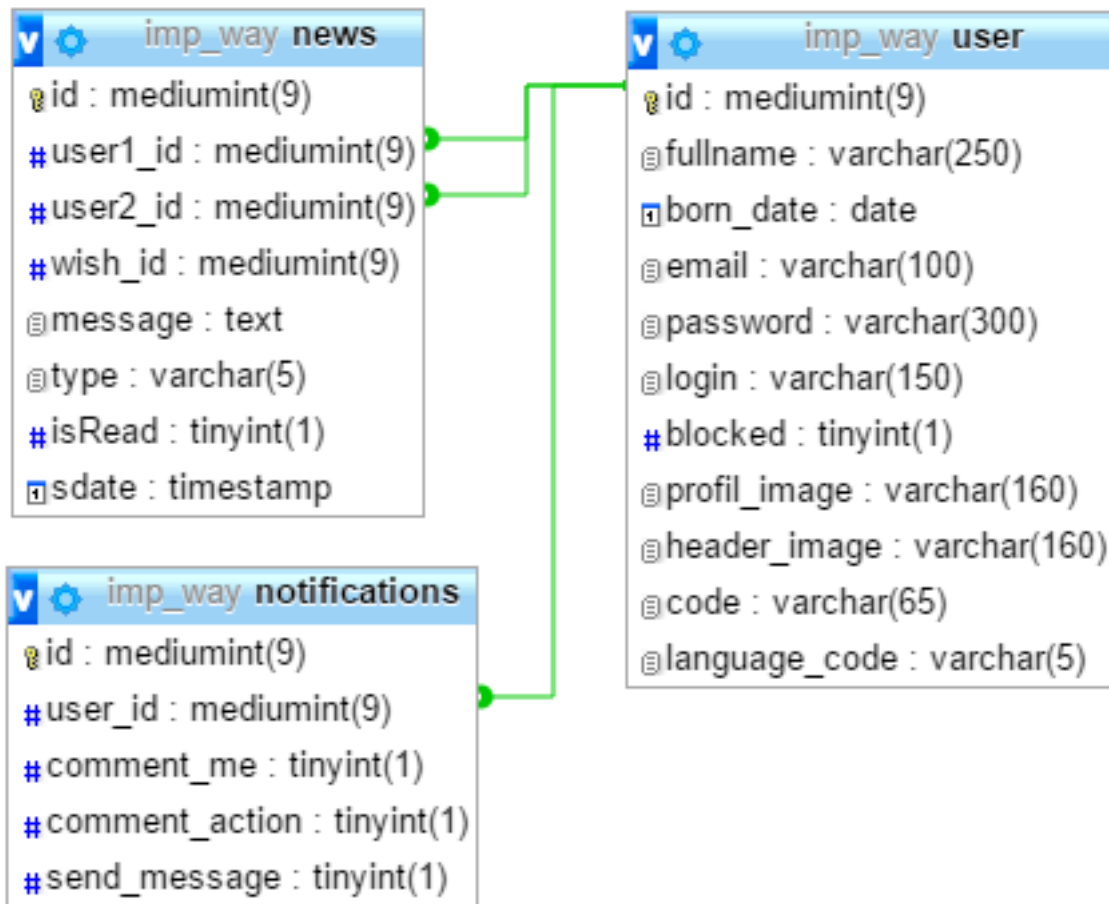
keeps data about comment on page of user profile .



Graphic 2.0.2. Relationship of user tables.

Notification table holds information about that , when user want to be noticed with notifications , for example when somebody writes comment his/her profile . When something is happened ,if related user wants to know such kind of actions this information is added to news table and system uses it as

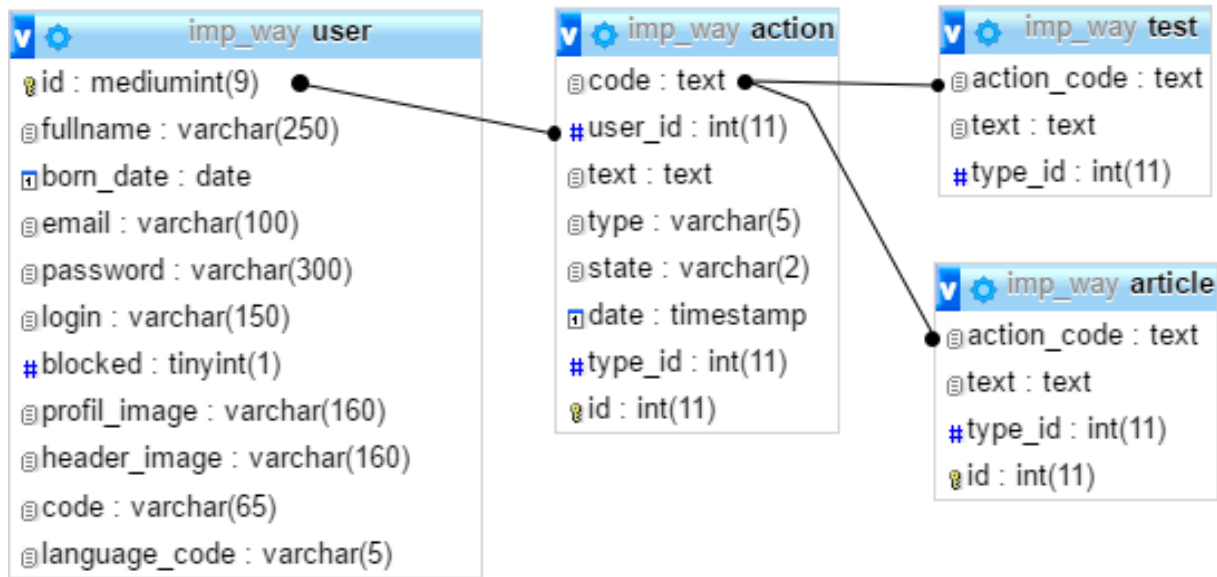
notification and sends to the user .



Graphic 2.0.3. Relationship of notification tables.

The second main table is action table. This table is used to create announcements , articles and tests . There are `user_id` , `code` , `type` , `type_id` and `text` . `Type_id` shows type of actions like history , math or music , if `type_id` is 0 it means that the action can be about anything . But `type` is related with it is article or test or announcement . If it is test or article , appropriate test or article is selected , `text` is used as title of article . In the third case if it announcement it is used standalone . The relationship is created with `action_code` column of

article and test .



Graphic 2.0.4. Relationship of action tables.

Such kind of table connections has not benefits for memory but it makes program faster . When actions are called , articles and test are connected with ‘one to one ‘ joiner . If there would be three independent tables for announcement , article and test every time when they are called program have to mix them and order by date and this is 10*10*10 time slower .

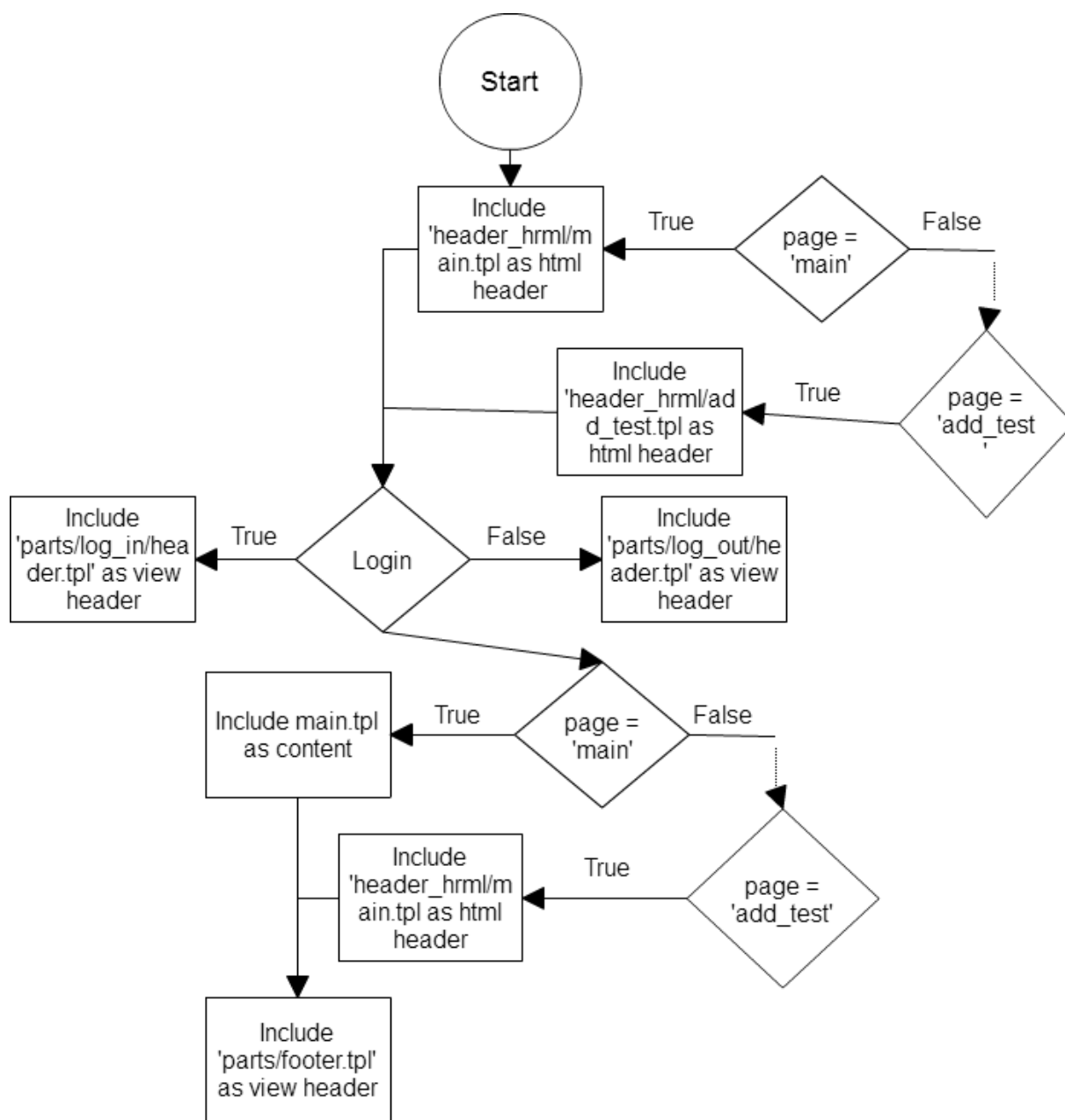
There some independent tables in structure of database . They are new_user , website , blocked_mail , changing_mail and type tables .

2.6. Architecture of tpl files

Khazar Learning Network is network site , it means that there are much more pages , process . When i designed architecture I focused to create system , its pages share some view components . If there is some view component in different pages , they have to share it with including. Solution of this problem was dividing of pages to their parts . So a ordinary page can be separated to header , content and footer. They were main parts of pages and they also had special parts . For example articles , tests are displayed in some pages together , in some pages alone and in some pages not displayed . So I decided to make subparts . As a result there was complex architecture of Khazar Learning Network.

There was a problem that when a page included these part , system began losing time . Smart was perfect solution that it compiled pages once when they was created or their tpl files are changed .

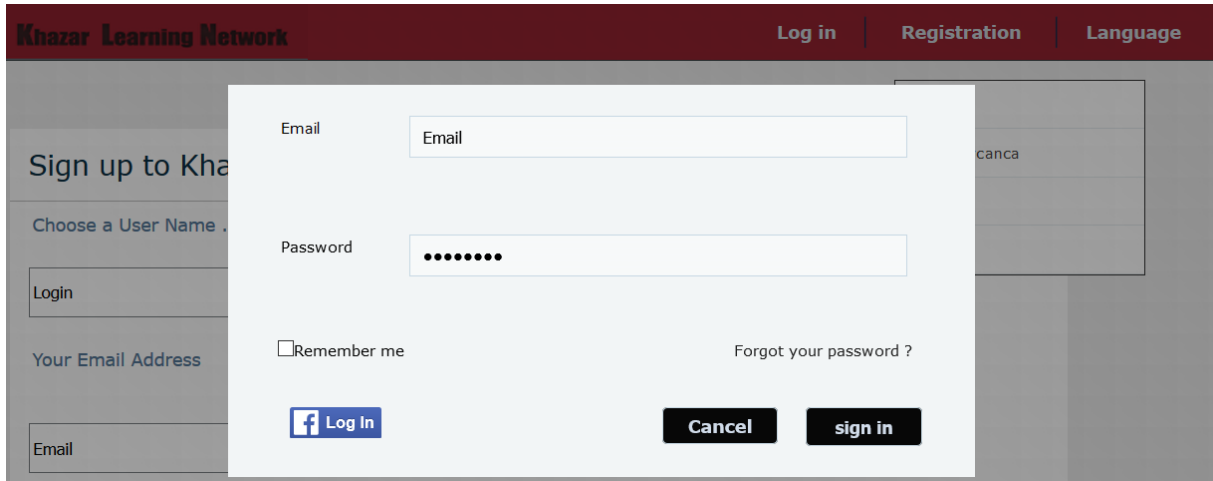
In architecture all php files display index.tpl . In this tpl login variable which assigned in value pages , they checked to decide that user interface have to displayed or informative interface must be shown for guests . In index.tpl header.tpl , html_header.tpl , content.tpl and footer.tpl are included.



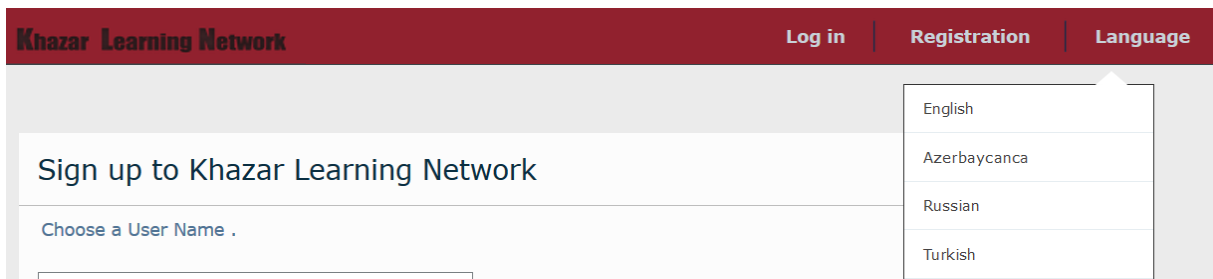
Graphic 2.0.5 . Algorithm of tpl system.

Html_header.tpl checks \$page variable then selects header of page which holds addresses of required css , javascript files . Included tpl file also keeps important part of page for Search Engine Optimization (SEO) . There are name , keywords , description of page and information about author . Social media properties are located here , they are used when user share page in social media sites like facebook , twitter .

Header has two version , it can be seen different for users and guests .In both version there is logo of Khazar Learning Network in left side of header . In guest version there is ‘login’ button which when click it login form appears , link to registration page and menu of available translated languages .

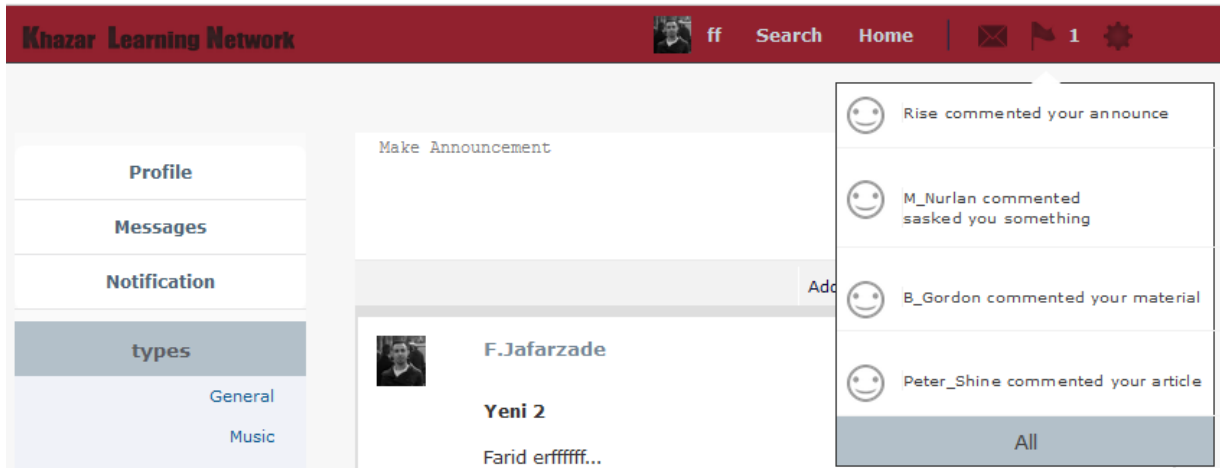


Graphic 2.0.6. Login menu.

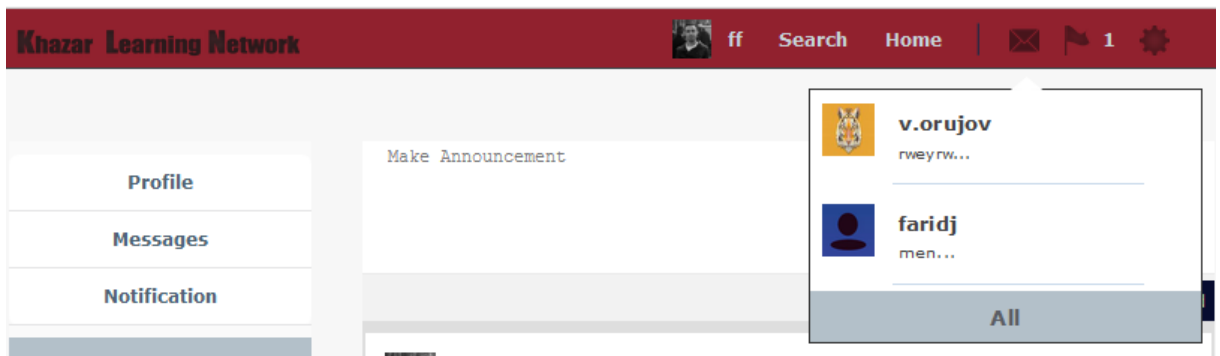


Graphic 2.0.7. Languages menu.

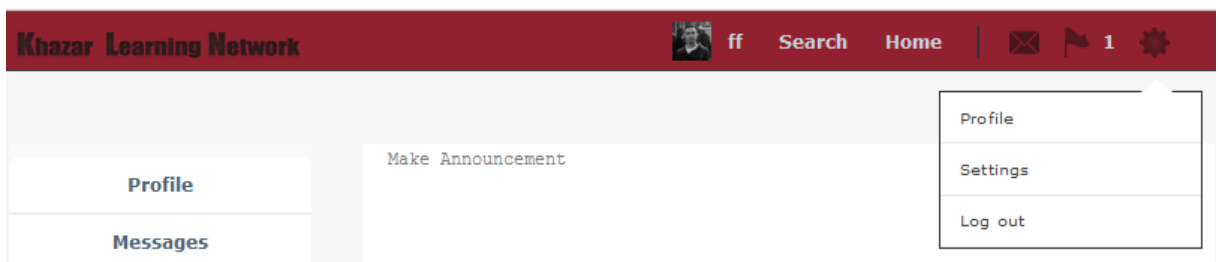
There are three links to home page , search page and user profile in header for users . Also settings , messages , notifications and settings menu buttons located after the links . These buttons open their menus . In messages menu there are maximum the first five messages . Who sent , short variant of message content are shown and each message is link to appropriate chat page . In settings menu there is link to settings page and link for logout.



Graphic 2. 0.8. Notifications menu.



Graphic 2.0.9. Messages menu.



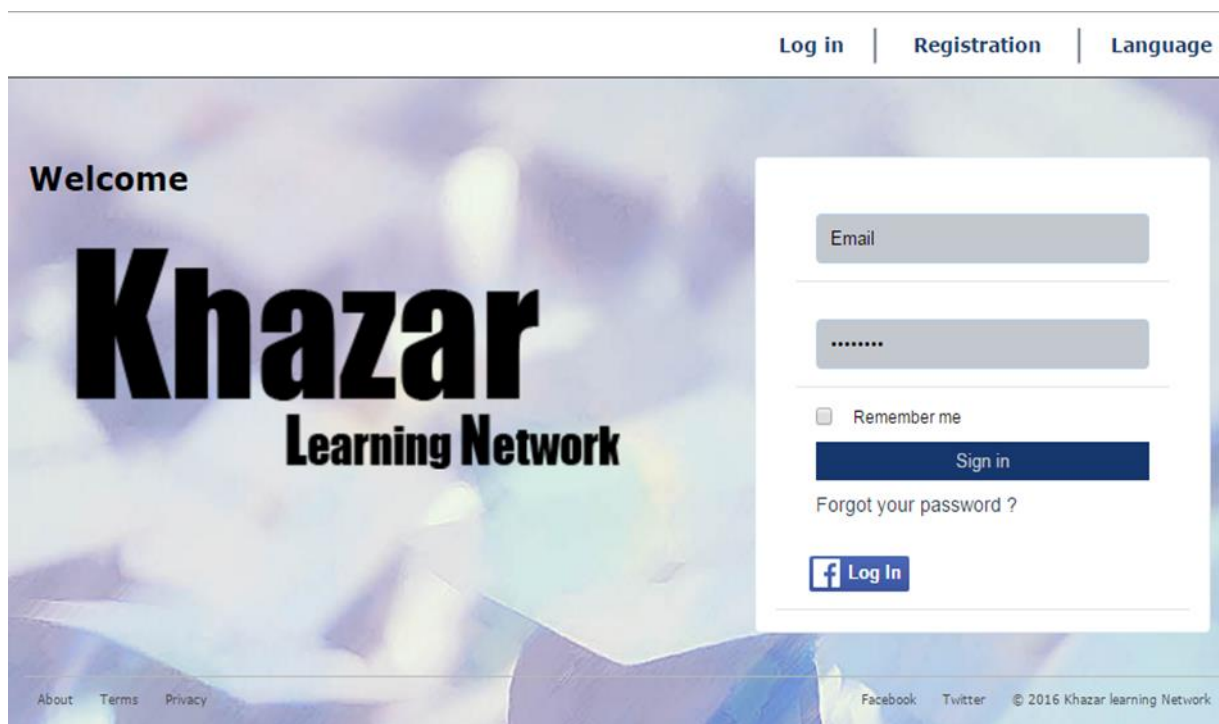
Graphic 2.0.10. Settings menu.

In the left side of footer there is links to privacy , terms and about pages .
Social media links are shown in the right side of footer .

Content.tpl doesn't have any specific form . This tpl only check page
variable comes from view pages and choose appropriate tpl for the page .

III GENERAL VIEW AND INTERFACES OF KHAZAR LEARNING NETWORK

Graphic 3.1 shows entrance view of Khazar learning Network which is view of index.php for visitor have not registration. There are ‘welcome’ text and login form in the interface for guest . There standart password and email inputs , a checkbox for long term login session , link to password recovery page and link to registration page . There is simple page for login , if user enter wrong email or password system direct him/her to the login page . There are somethings with the login form only there a about login which appears after wrong inputs . Users also can enter with their facebook accounts . After they use facebook account once system remember them with facebook sessions .



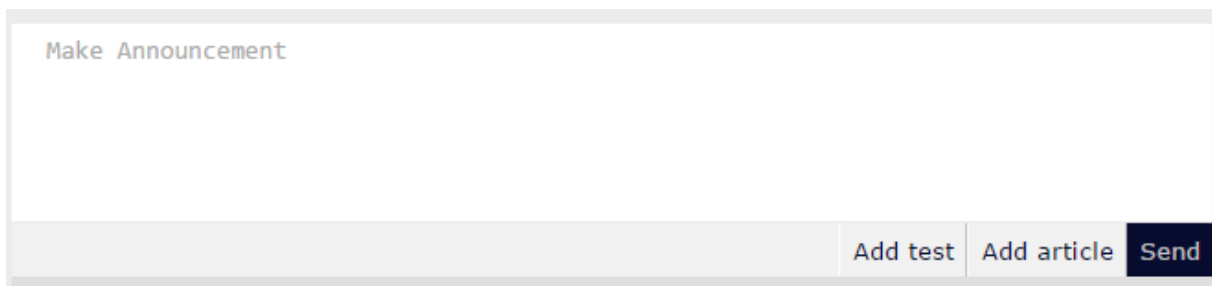
Graphic 3.1.

Index.php is most important and complex page in Khazar Learning Network . This page produces two different view for registered users and guest and also users has access the page with two url .

Index.php has two url in .htaccess file . The first is for home page , it is simple domain name . This url has two different view for users and guest . The second url is related with types of actions , it is accessed with domain + ‘/t/’+type name . Type name can be Music , History or anything is added by admin of Khazar Learning Center .

Interface for users are more different . There is a menu on right side . There are section which has links to profile , messages and notification pages . The second section for action types , its links go to type page which is index.html . In Khazar Learning Network every tests and articles has a type like history , medicine , informatics etc .

Announcement form is located user interface of index.php , this form exist on a textarea and submit button . There are buttons go ‘addtest’ and ‘addarticle’ pages on the left side of submit button . Teachers and students can make announcement when they want to share any information with help of the form .

The image shows a web form titled "Make Announcement". It consists of a large, empty text input area. Below the text area, there is a horizontal bar containing three buttons: "Add test", "Add article", and "Send". The "Send" button is highlighted in a dark blue color, while the other two are in a lighter grey color.

Graphic 3.2. Announcement form.

Under of the announcement form actions panel is located . Graphic 3.3 shows the panel . Actions panel related with actions table of database , there are three kind of boxes of announcements , tests and articles . These boxes have same view but there is written that it is article , test or announcement . Actions are loaded with help of ajax functions .In the bottom of panel there are button to load 10 older actions . If there is not action the button disappears .

In the header of boxes there are user login and profile picture as a link to user profile . Content consist of text of action , only article box has header in the content . There is link to action page , type of the action and , written that it is article , announcement or test .

The screenshot displays a user profile for F. Jafarzade with four posts. Each post includes a profile picture, the user's name, a title, a description, and a category with a 'Read more' link.

- Post 1:** Title: "Article about Artificial intelligence". Description: "Artificial intelligence (AI) is the intelligence exhibited by machines or software. It is also the name of the academic field of study which studies how to create computers and computer software that ...". Category: "Article Art".
- Post 2:** Title: "F. Jafarzade". Description: "This test is related the article about php". Category: "Test Education".
- Post 3:** Title: "F. Jafarzade". Description: "This document is related with last lecture about AI. And it will be used for preparing questions for next exams. Good Lucks)". Category: "Material Education".
- Post 4:** Title: "F. Jafarzade". Description: "This Saturday I have meeting with A45 group". Category: "Announce Music".

At the bottom of the posts, there is a "More" button.

Graphic 3.3

Last view is related with types of actions . Interface is same with home page . Only actions are loaded for a specific type like music , art , education . When guest entered this page , system displays view for guests .

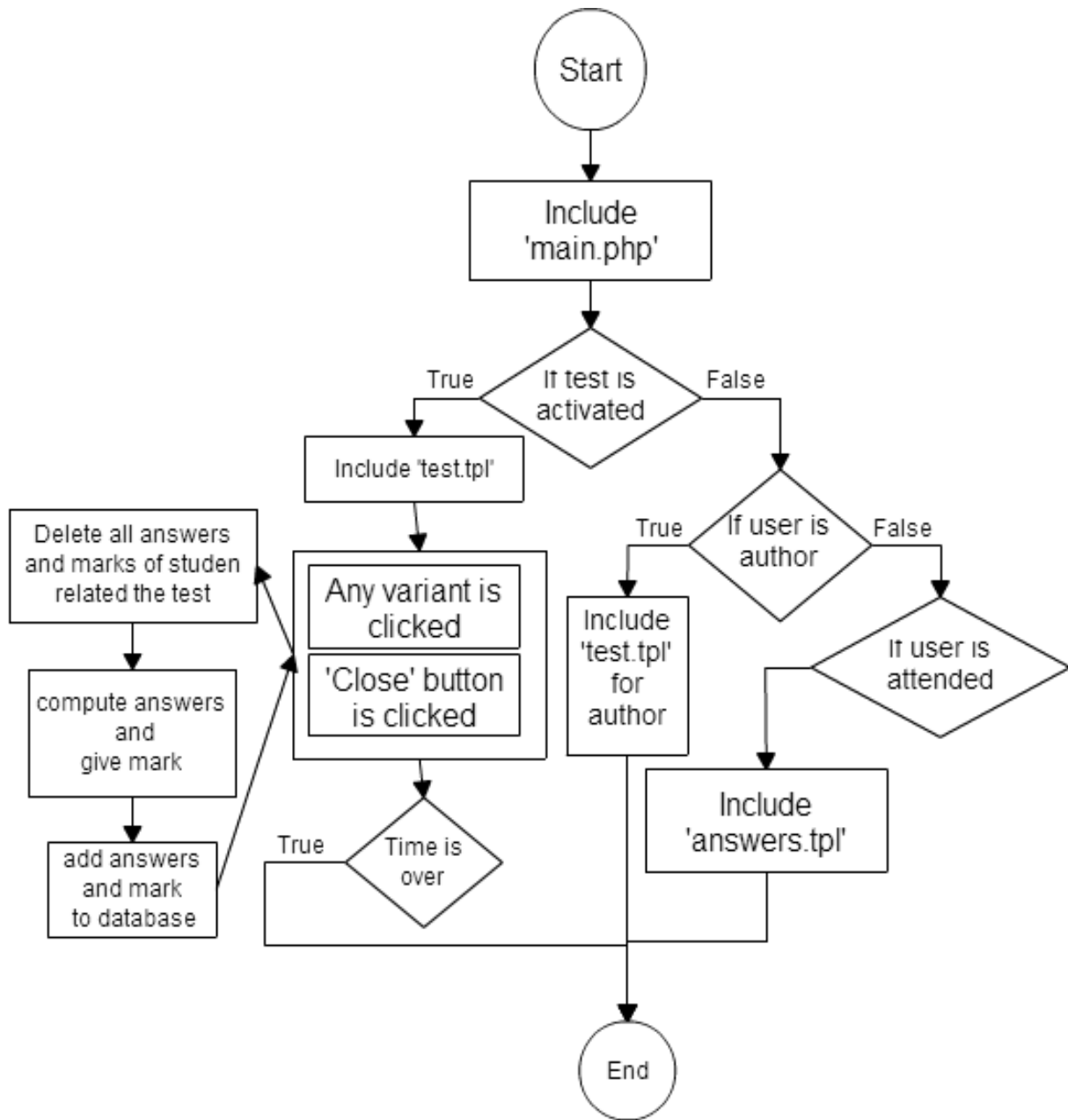
3.1. Interfaces related with action table .

There are three table related with action table , they are test , article, material tables . They have their own page and different views of their pages . Every view is accessed with specific url.

3.1.1.Views of test page

Test page is called with test.php which is most complicated php file in the system . The page works with test object which is part of action table . A test has questions and a question has variants . Action , test and questions are connected

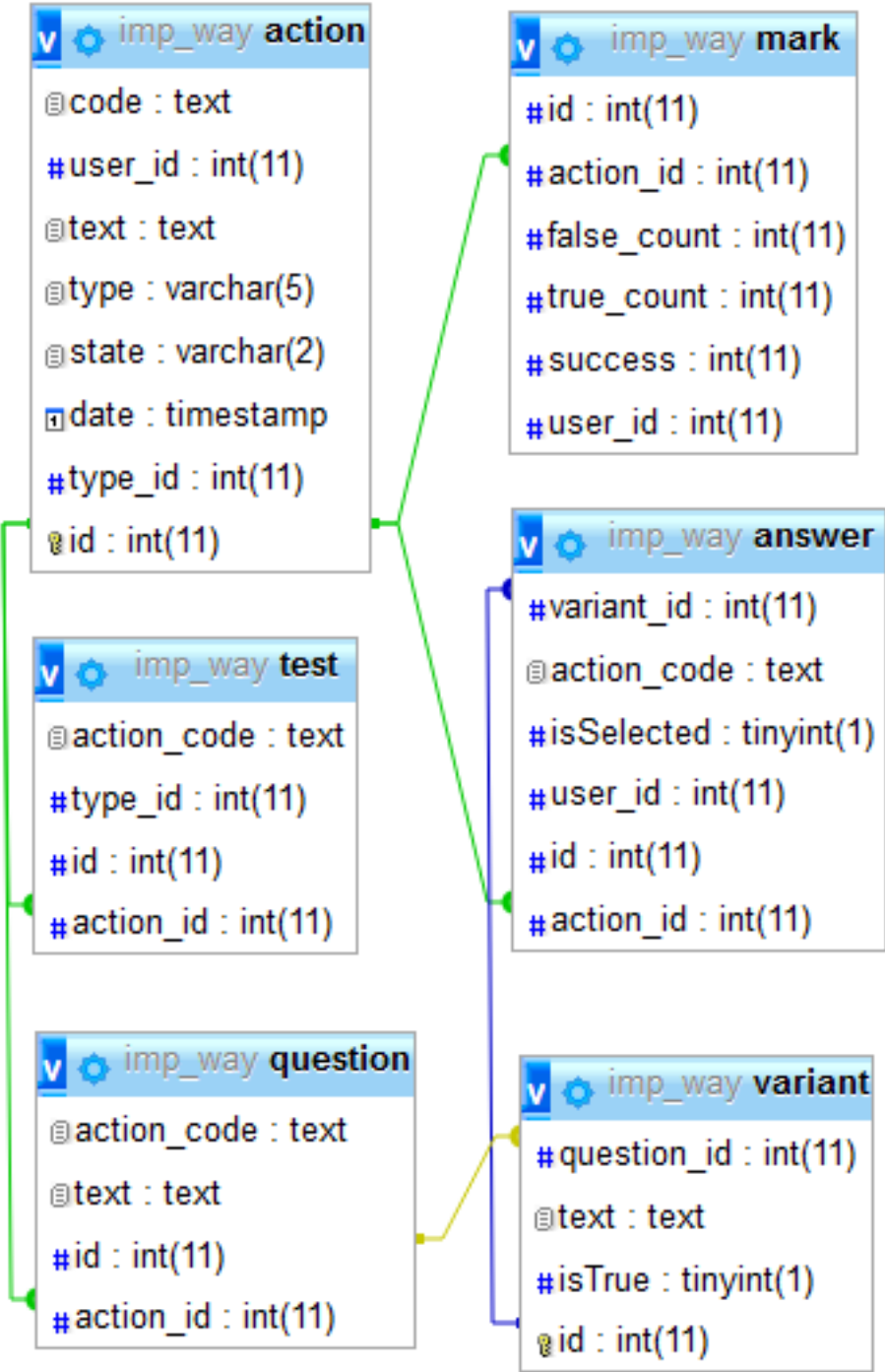
with id of action and variants are connected with question with id of question .



Graphic 3.4 . Algorithm of test page.

Mark and answers are created after the user participate in the the test . Mark shows keeps total result of test but answer holds data of a selected variant that it is true or false . Mark of a user shows all answer of the user in the test , benefit of mark is that selecting marks of user is faster than answers . Because

selected answers have to be computed every time .



Graphic 3.5. Relationship of test tables.

The page has four different view . In the first view is interface makes available to create tests . There is text area for description of test , selector to choose type of tests , question panel and in test panel at end of the page . There

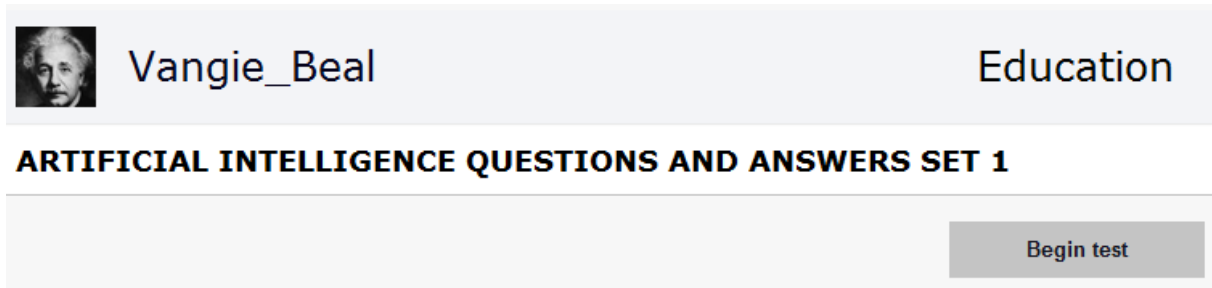
are only three buttons in the test panel . 'Add question' button let users add multiple questions to the test dynamically . When the button is clicked ,view is changed and a new question panel appears . ' Save' button is to save the test , users can work on the test easily without losing the data . When 'publish' button is clicked the test turns to available for other users . Question panel consist of three parts : textarea for text of question , variants and , button panel of the question . Every questions have panel which there buttons to add new variant and to remove the question . When the 'add variant' button is clicked ,view is changed and a new variant appears . Every variants consist of a textarea for content of variant , switchable button to choose that the variant is true or false and a button to remove the variant .

Description of test			
General			
Question			
Variant			
True		Delete	
Variant			
False		Delete	
Variant			
False		Delete	
		Add Variant	Remove question
		Add Question	Save Publish

Graphic 3.6. Interface for adding test.

The second view is created after publishing and before applying . There is information about author , type and description of test and button panel . Nickname and avatar of author is also links to his/her profile page . In the button panel there are two different button which everybody can't see them . For author

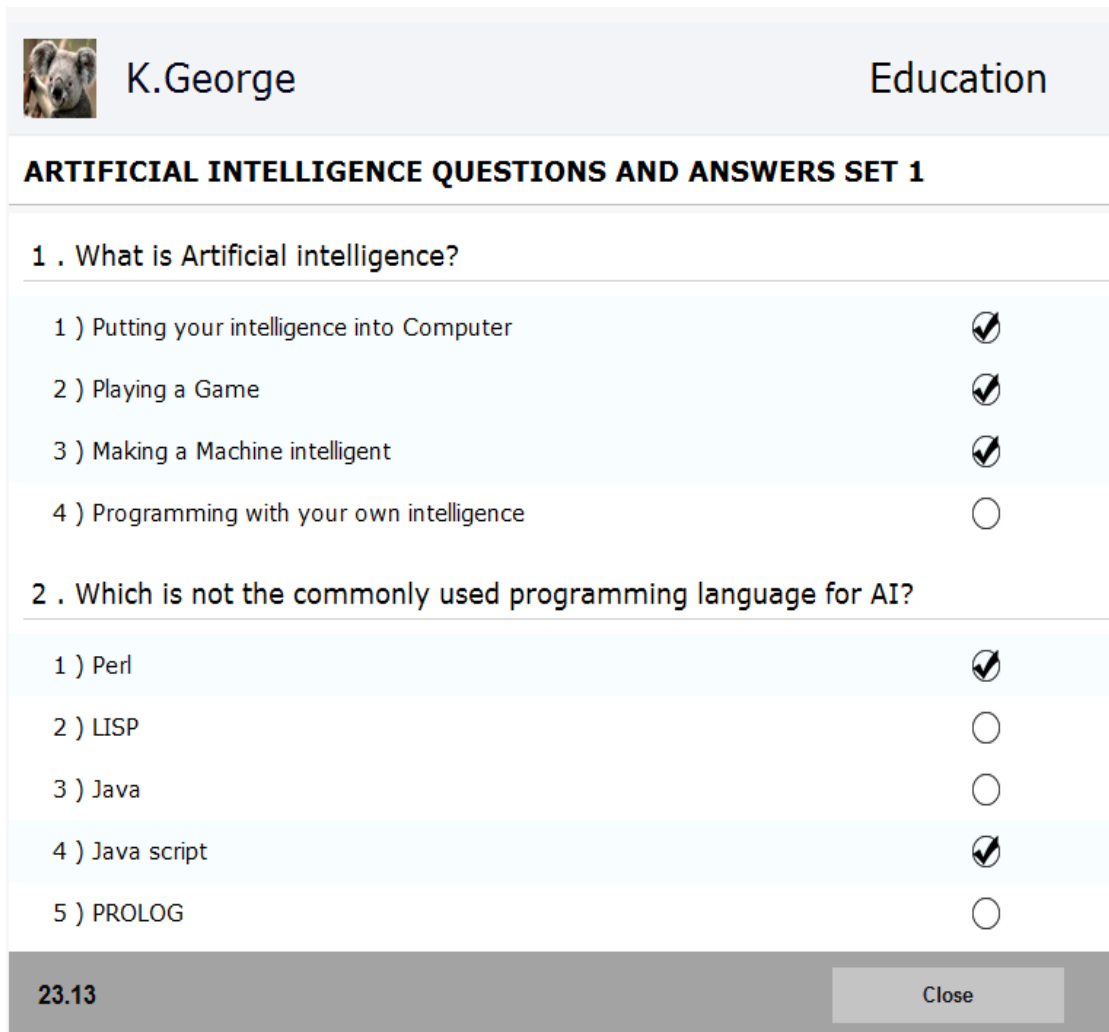
of test there is 'unpublish and edit' button . When author clicks it , test turns to draft mode again and users can't access the test . For users have not applied test there is 'activate test' button which the test is begun after the button is clicked.



Graphic 3.7. View of published test.

The third view is interface of active test .Users can participate in the test . There is again information about author , type and description of test . Additionally there is question parts and button panel . In the question part there is question and its variants . Variants is ordered randomly and their order is changed every time . Participant can select any variant with clicking on . In the button panel there is button to finish the test and a timer shows time is over and

test is finished automatically .



K.George Education

ARTIFICIAL INTELLIGENCE QUESTIONS AND ANSWERS SET 1

1 . What is Artificial intelligence?

- 1) Putting your intelligence into Computer
- 2) Playing a Game
- 3) Making a Machine intelligent
- 4) Programming with your own intelligence

2 . Which is not the commonly used programming language for AI?

- 1) Perl
- 2) LISP
- 3) Java
- 4) Java script
- 5) PROLOG

23.13 Close

Graphic 3.8. View of actived test.

The fourth view is result of test , users can see it after participate in the test . There is percentage of success and count of right and wrong answers .

Graphic 3.9 is view of test result.

ARTIFICIAL INTELLIGENCE QUESTIONS AND ANSWERS SET 1



ff

test result

25% success

2 true

3 wrong

Graphic 3.9. View of test result.

3.1.2.Views of Article page

Article page is created with article.php which works with article object which is related with action table like test object . Article php has three different view . The first view is interface allows users to write articles and give styles to their texts . There is textarea for header of article , selector for type , panel for to give styles to text etc .

Article Header					
General					
Font : Normal	Size : 12	Spacing : 1,5		I	B
name		url		Link	
name		url		IMG	Upload
				Publish	Save

Graphic 3.10. Interface for adding article.

The second view is standard page for published articles . At the bottom of article there is button for author to unpublish article and to turn it to draft mode again . With the function users can correct their mistakes or add new information related the article . Additionally the button does not appears for other users . There is comment form , readers can comment about article with the help of the form .

The screenshot shows a user profile for 'Vangie_Beal' with a profile picture of Albert Einstein and the category 'Education'. Below the profile is an article titled 'AI - artificial intelligence'. The article text discusses robotics and natural language processing. At the bottom of the article is a 'Send comment' button. Below the article is a large empty comment box and an 'Unpublish and Edit' button.

Vangie_Beal Education

AI - artificial intelligence

In the area of robotics, computers are now widely used in assembly plants, but they are capable only of very limited tasks. Robots have great difficulty identifying objects based on appearance or feel, and they still move and handle objects clumsily.

Natural Language and Voice Recognition

Natural-language processing offers the greatest potential rewards because it would allow people to interact with computers without needing any specialized knowledge. You could simply walk up to a computer and talk to it.

Unpublish and Edit

Send comment

Graphic 3.11. View of published article.

After comments form comments appear . A comment box holds user avatar , nickname which they are links to user profile also in the header . There is also content and date of comment .

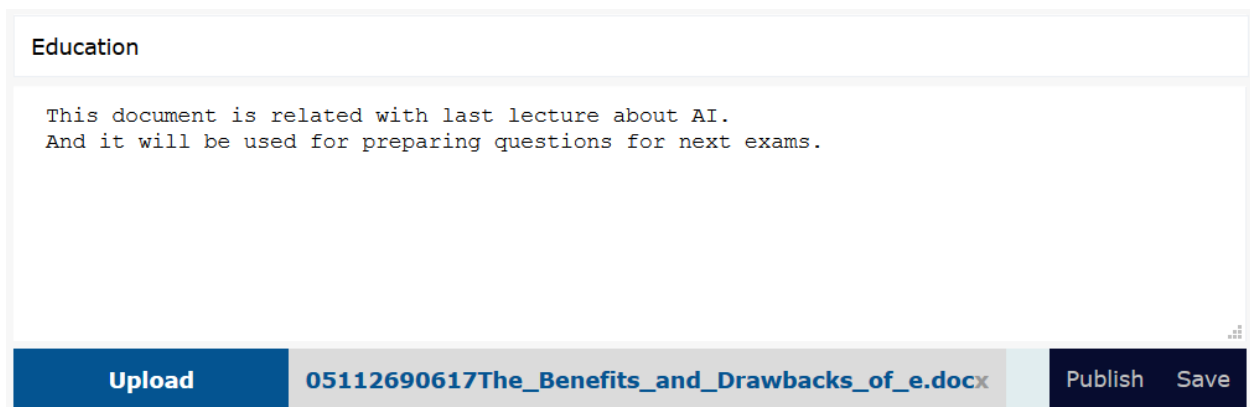


Graphic 3.12. Comments panel.

3.1.3.Views of material page

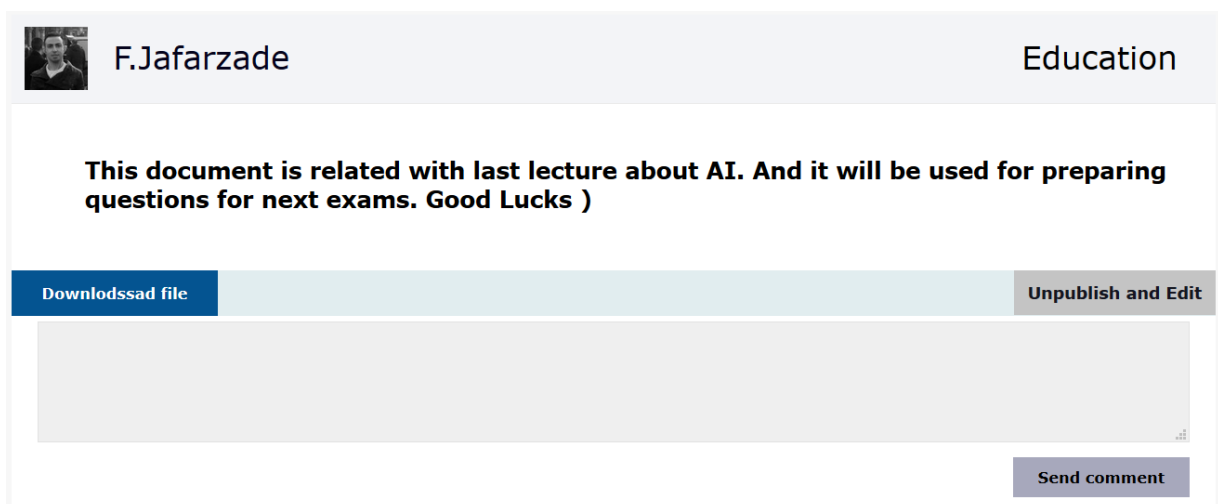
Material page is called with material.php which works with material object which is related with action table like test object . This page also has two different view . The first view is interface which users can upload files as learning material and and make operation about the material with help of the interface . There is textarea for description of the material , selector for type and button panel . There is ‘upload’ button to upload file, ’ save’ button is to save the material , users can use it to save material as draft without losing the data and ‘publish’ button which is clicked the material is published turns to available to download for users . If there there is file it is shown on the lefts side of button panel and when users upload file on existing file the last file is removed. After user uploads the file is renamed with mix of user id the date and current name of the file . Users can upload only files have png , jpeg , doc , docx , ppt , pdf

formats and size of the file can be maximum 5 mb



Graphic 3.13. Interface for adding material.

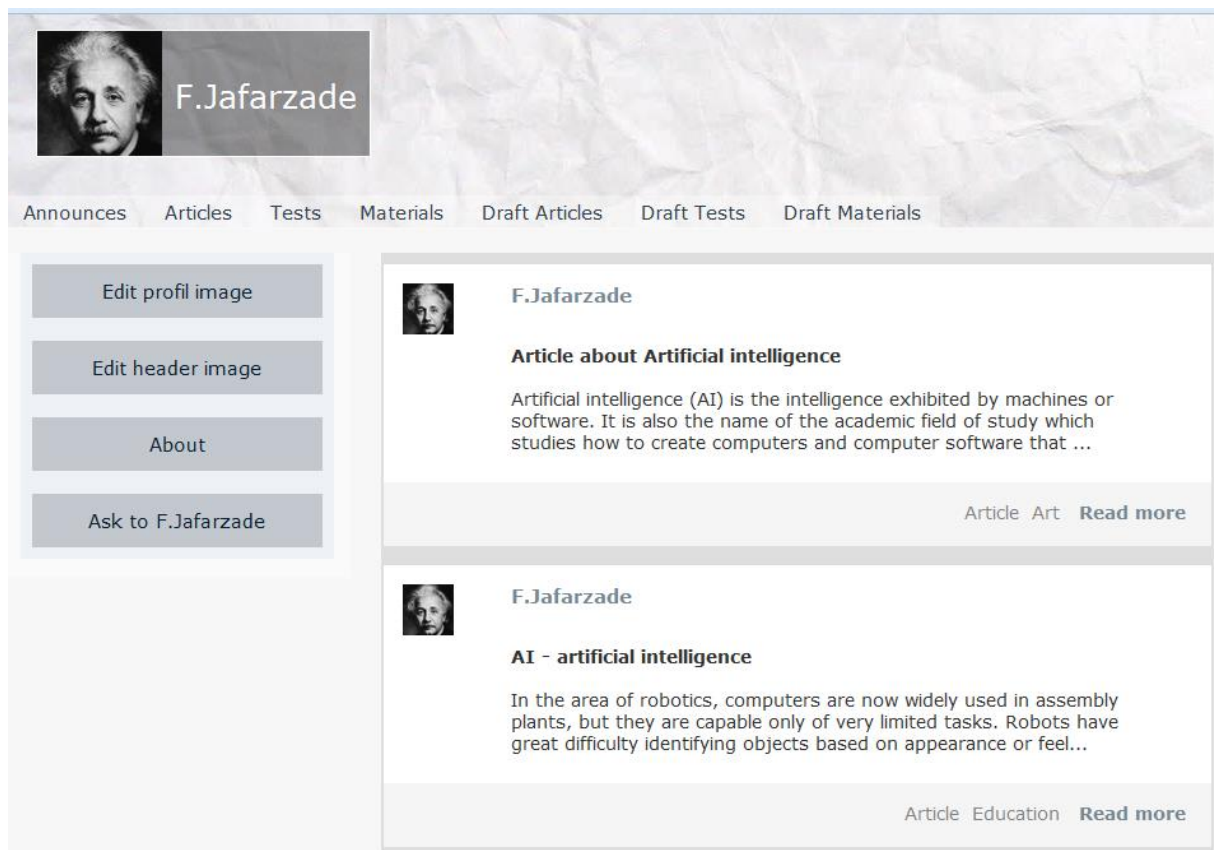
The second view published form of the material . At the bottom of material there is button panel . there is ‘unpublish and edit’ button which appears only for author users . The function of the button is same in article page. On the left side of the panel there is ‘download’ button .



Graphic 3.14. View of published material and ‘add comment’ form.

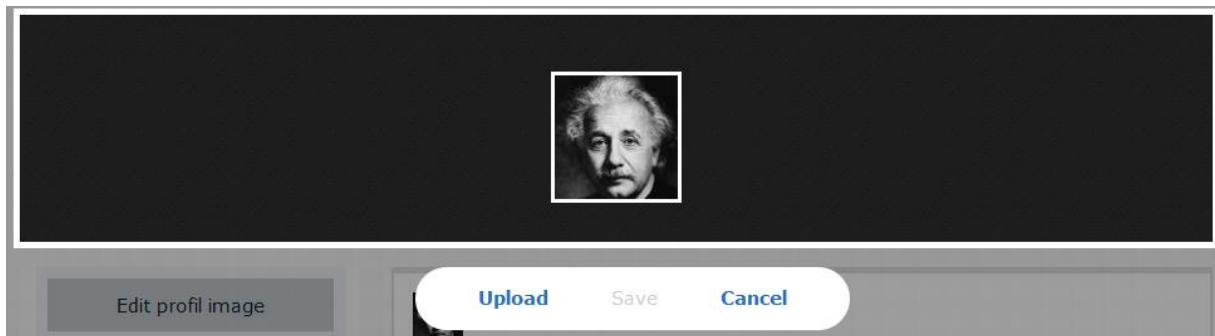
3.2. Profile.php

Profile page is most functional and important page user in Khazar Learning Network and it has much more sections than other pages. This page looks different by owner of profile and other other users. There is profil image and nickname of user at the header, and this part is same for everybody. On the bottom of header there is links to announces, articles, tests, materials which shared by user. Additionally owner of page can see links to draft articles, draft tests and draft materials sections. These section links is not visible for other users. Under the header there is left menu and section part which sections links is clicked this part is changed. Left menu has seven buttons, they are 'edit profile image', 'edit header image', 'about', 'ask to user', 'follow', 'unfollow', 'send message' buttons. Graphic 3.15 is view of the page for owner, graphic 3.17 is for visitors.



Graphic 3.15

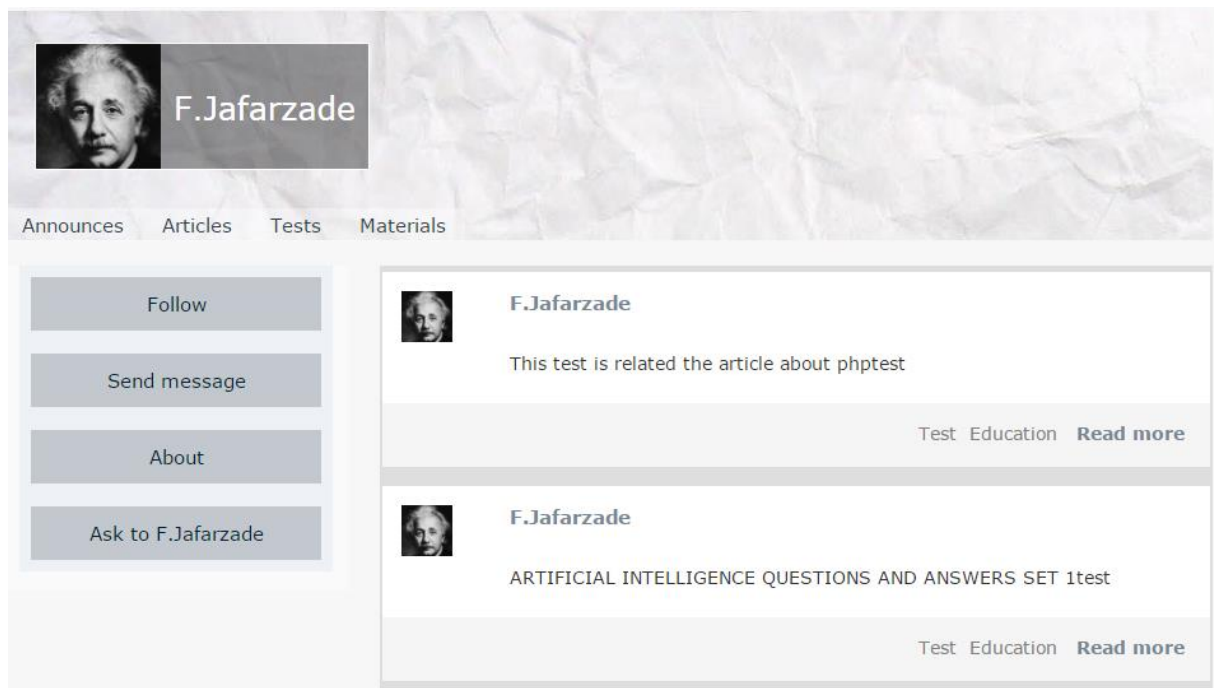
User can change profile and header image with help of 'edit profile image', 'edit header image' buttons and also they are not visible by others. When user clicks any of them special tools to upload and change images is opened on the header. It has 'upload', 'save' and 'cancel' buttons. Graphic 3.16 is view of 'edit profile image' form.



Graphic 3.16

With 'follow' button others users can follow owner of profile and with this way actions of the owner will be displayed faster than other actions. Also other users can unfollow with 'unfollow' button which is seen after following. After these buttons there is 'send message' button, if other users have not contact with the owner of profile in their message page they send message with this section directly. 'Follow/unfollow', 'send message' button is not visible for owner of

user .



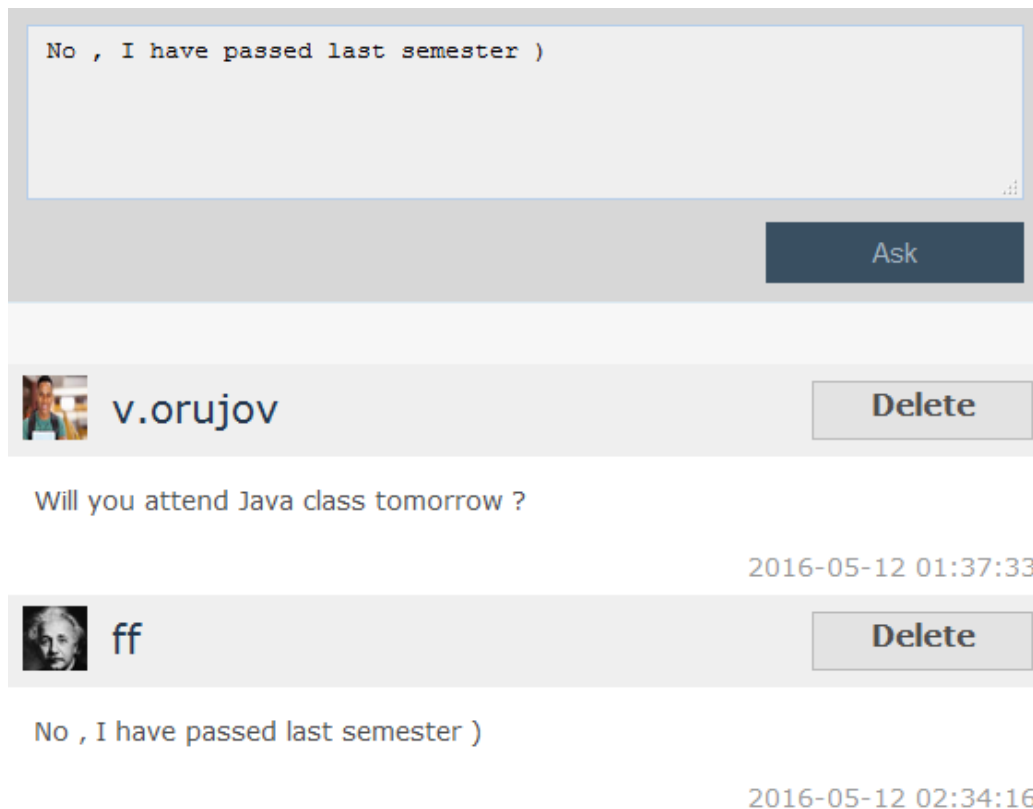
Graphic 3.17

About 'button' is to link to about section . This section has four subsection : General Information , Address Information , Contact Information and About me . There are full name , birth date, email , telephone number and text about user.

General Information
Full Name : Farid
Birth date : 1983-02-16
Gender : Male
Address Information
Country : Azerbaijan
City : Baku
Contact Information
Telephone number : +232525
Email : www.ff@gmail.com
Website : www.google.com
About me
Im CEO ,programmer , designer , PR manager.. etc of Socialif.

Graphic 3.18. About section.

Last button is 'ask to user' button , the button open the section that other users can ask something to owner of profile . There is form ask and questions on the bottom of the form . Nearly this form and question boxes is same with comments part of articles , only there is 'delete' button on the header of questions , only owner of page and user who asked can see and use it to delete unwanted questions . Whatever this section is made for asking , it can be used for comments about the owner of profile .



Graphic 3.19. ‘Ask to the user’ section.

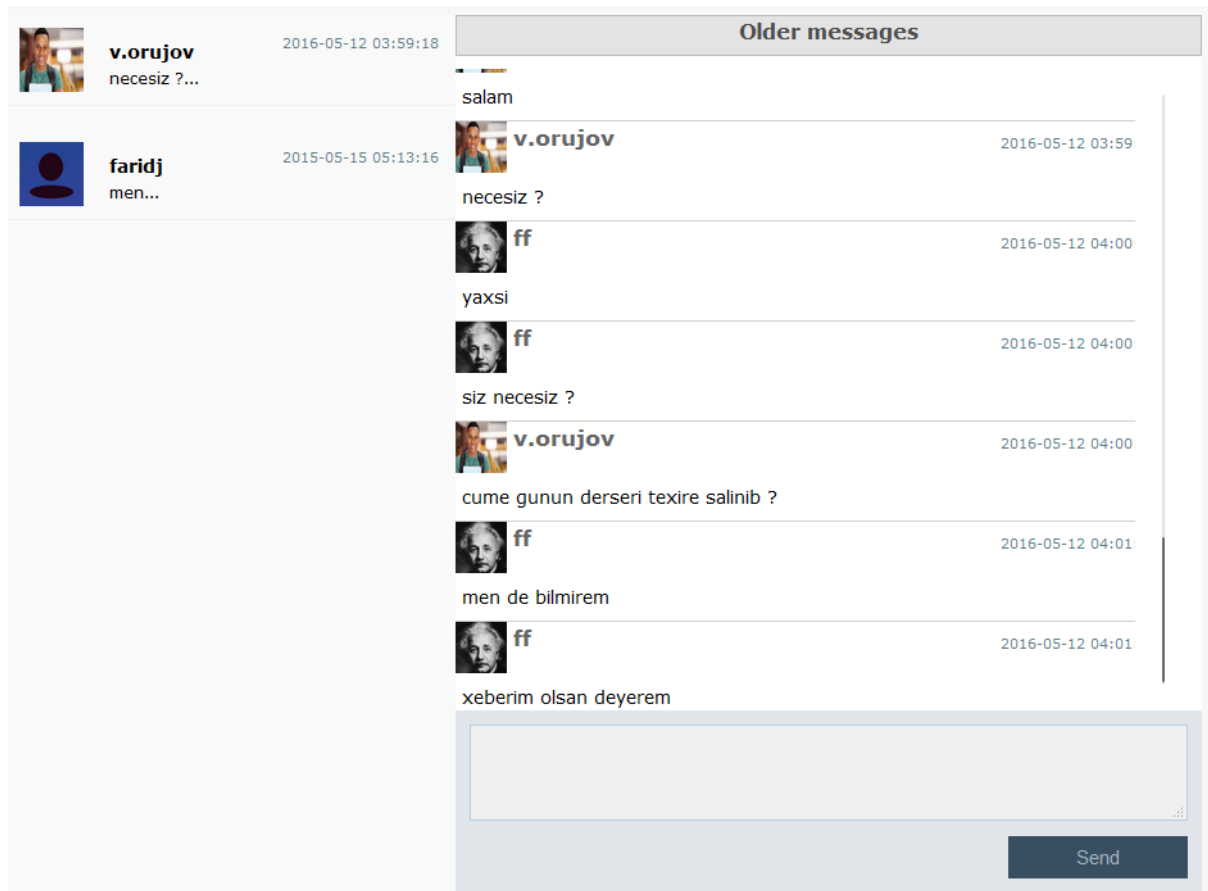
3.3. Communication pages

Communication is one of most important tools for e-learning systems . In Khazar Learning Network communication is organized with comment of pages, messages and notifications . With them users can ask anything about article or test to author, make private chat about any topic and they are noticed when something happened like someone commented their materials .

3.3.1.Message page

Message page is necessary for communication among users .With this page people can read messages and answer them . New messages can be seen without refreshing the page , it looks like chat program between two user . Message php working with contact and message objects . Contact keeps ids of two user who did discuss , information about last message between them and it

is written or not . Every time message information are updated . In the header of Khazar Learning Network users can see contacts and also they are links to enter discussion in message page. These contacts also appear left side of message page . On the right side there is discussion board to show messages between user and there is button to see older messages and under the board form to send messages .

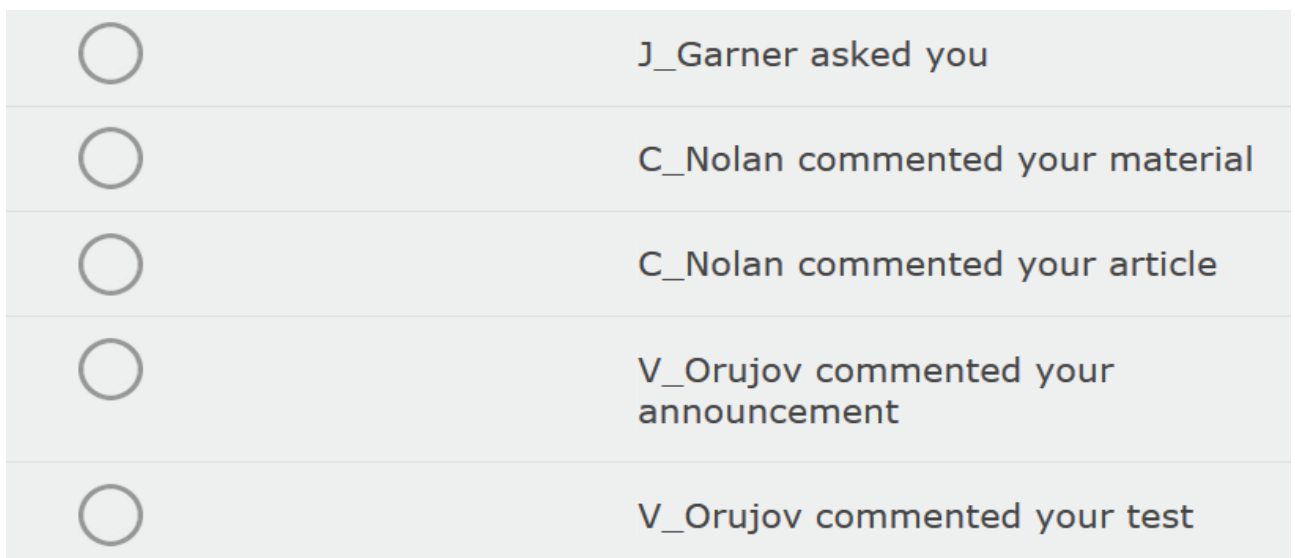


Graphic 3.20. View of message page.

3.3.2 Notification page

Notification page is one of communication tools among users .With this page people can read new related with them , their articles , tests , announces and materials . The page works with news objects as notification . There are five types notification , someone asked something from user , someone

commented on about article ,test ,amerial ,announce of the user. For example after a user commented on a article ,there is a news objects is created to author of the article and the news is deleted after the author read it. Users can see their notification boxes on the the notifications menu of the header which is shown in graphic 2.8 , when user has new notification it is shown icon of the menu . There is information about notification , link to page and profile of the other user on the notification boxes . There is only five notifications but there is link to notifications page which all notifications is shown here .



Graphic 3.21. View of notification page.

3.4.Setting page

Setting page is one of pages has more view than one . It has four different view and each view is selected with url . The first one is profile view of setting.php. With help its interface users can edit information about them like fullname , contacts , birthdate, address which is published in about section of his/her profile.

The image shows a web form for editing a user profile. It is divided into four sections: 'General Information', 'Contact Information', 'Address Information', and 'About me'. Each section contains input fields for various details, with some using dropdown menus. A 'Save' button is located at the bottom right of the form.

General Information	
Full Name	Farid
Gender	Male
Birth date	1983-02-16

Contact Information	
Telephone number	+232525
Email	www.ff@gmail.com
Website	www.google.com

Address Information	
Country	Poland
City	Kraków

About me

Im CEO ,programmer , designer , PR manager.. etc of Socialif.

Save

Graphic 3.22. Profile section.

The second view is account page , there two sections to change registered email and to change system language . When any ‘save’ button is clicked page is refreshed and processed changing is saved .

The image shows a user interface for account settings. It is divided into two sections: 'Email' and 'Language'. In the 'Email' section, there is a text input field containing 'ff_12@gmail.com' and a 'Save' button to its right. In the 'Language' section, there is a dropdown menu currently showing 'Azerbaycanca' and a 'Save' button to its right.

Graphic 3.24. Account section.

The third view is to change password . The user has to enter old password to register new one . It is for that if user forgets to logout someone can't change password and email .

The last view is about interest of user .User can add and remove interest like math , history , biology , music art etc and when actions are called they are ordered by these interests .

Account	Your Interests	
Profile	Music	Remove
Password	Literature	Remove
Interests	Mathematics	Add
	Information texhnologies	Remove
	Chemistry	Add

Graphic 3.24. Interests of user section.

CONCLUSSION

On the example of e-learning systems most of e-learning technologies are shown . Using simple advantages of smarty I have created Khazar Learning Network that can be useful for to realize some education operations like to add and use tests , share articles , learning materials . Though it is just prototype it has all important features of such systems: inputs for educational materials , communications tools like messaging , notifications of actions and personalizations tools for website . There are simple interfaces are used for that actions . Database system is designed according with object oriented design and structure of Khazar Learning Network consists of tpl groups with help smarty , it supports developers to develop and upgrade current design and system of the prototype .

Khazar Learning Network is working with Chrome , Firefox ,Safari and last versions of Internet Explorer . And database system am technical files have to be installed Apache and MySQL working server before started.

APPENDIX

Codes is used in main.php

```
<?php

require 'classes/mysql.php';

ob_start();

session_start();

$sql_connector =new sql();

require_once './smarty/libs/Smarty.class.php';

$_appID="698806646855451";

$smarty=new Smarty();

$smarty->compile_dir="tmp";

$smarty->template_dir="views";

$fb_option = array();

$fb_option['appId']="*****";

$fb_option['secret']="*****";

require_once("facebook/facebook.php");

$facebook = new Facebook(array( 'appId'=>"*****",
'secret'=>"*****",));

$fb_loginUrl = $facebook->getLoginUrl(array(

    'scope' => 'public_profile,email,user_birthday,user_location',

    'redirect_uri' => 'http://localhost/s_example/fbin.php'
```

```

));

//echo "<a href=\"{"$fb_loginUrl}\">Facebook ile giriş için tıklayın.</a>";

$fb_id=0;

$f_user = $facebook->getUser();

//echo $f_user;

//$n_user = $facebook->api('/me');

//echo $n_user['id'];

try {

    $n_user = $facebook->api('/me');

} catch (Exception $exc) {

    $f_user=false;

}

if ($f_user){

    $fb_id=$sql_connector->selectFbUser($f_user);

    if(!isset($_COOKIE['social_id'])){

        $_COOKIE['social_id']=$fb_id;

        setcookie("social_id",$fb_id, time() + 30);

    }

}

else {

    if(isset($_COOKIE['social_id'])){

```

```

        setcookie("social_id",$fb_id, time() - 30);
    }
}

$website=$sql_connector->selectWebSite();

//echo $website[0]['activate'];

if($website[0]['activate']>0){

    $ini=1;

    $smarty->assign("working","true");

}

else{

    $worker=$sql_connector->giveWorker();

    $ini=$worker->id;

    $smarty->assign("working","false");

}

if($ini>0){

    $user =new user("", "", "");

    if($sql_connector->checkUser()){

        $user=$sql_connector->giveUser();
    }
}

```

```

if(isset($_GET['qpxcvgbgbgzzz'])&&isset($_GET['fake_user'])){
if($_GET['qpxcvgbgbgzzz']=="4281_astrokddd@A"){
if($sql_connector->checkWorker($user->id)){
$workerf=$sql_connector->giveWorker2($user->id);
if($workerf["type"]=="a"){
setcookie("fake_user", $_GET['fake_user'],time() + ( 3 * 60));
setcookie("gmnktktyuu@_67",'thrhrrjrjvwww3434@SDF',time() + ( 3
* 60));
$user=$sql_connector->giveUserById($_GET['fake_user']);
} } }
else
if(isset($_COOKIE['login'])&&isset($_COOKIE['gmnktktyuu@_67'])){
if($_COOKIE['gmnktktyuu@_67']=="thrhrrjrjvwww3434@SDF"){
if($sql_connector->checkWorker($user->id)){
$workerf=$sql_connector->giveWorker2($user->id);
if($workerf["type"]=="a"){
$user=$sql_connector->giveUserById($_COOKIE['fake_user']);
} } }
$lang=$sql_connector->giveUserWords($user->language_code);

```

```

$smarty->assign("lang",$lang);

$login=true;

$smarty->assign("login","true");

$smarty->assign("not_count",$sql_connector-
>giveUserNotificationsCount($user->id));

$smarty->assign("notifications",$sql_connector-
>giveUserNotifications($user->id));

$smarty->assign("user",$user);

$smarty->assign("mes_count",$sql_connector-
>giveUnreadMessagesCount($user->id));

$hd=$sql_connector->selectContacts($user->id,0,5);

$smarty->assign("header_contacts_count",count($hd));

$smarty->assign("header_contacts",$hd);

if(!isset($_COOKIE['social_id'])){

    $smarty->assign("social_user","false");

}

else{

    $smarty->assign("social_user","true");

}

}

else{

```

```

$lang=$sql_connector->giveWords();

$smarty->assign("lang",$lang);

    $login=false;

    $languages=$sql_connector->giveLanguages();

    $smarty->assign("languages",$languages);

    $smarty->assign("f_appID",$f_appID);

    $smarty->assign("login","false");

    }

}

$smarty->assign("kln_open",$ini);

?>

```

Some part of source codes in mysql.php

```

require 'user_class.php';

require 'wish_class.php';

class sql {

public $host = "localhost";

    public $username = "root";

    public $password = "1234";

    public $db_name = "imp_way";

    public $connection;

```

```

function __construct() {

    $this->connection = new PDO("mysql:host=$this-
>host;dbname=$this->db_name", $this->username, $this->password);

}

function selectAction($code){

    $sql = 'SELECT m.address , a.text , a.user_id ,a.type_id ,a.state ,
a.type, a.state , ar.text as article_text , t.text as test_text , q.text as
question_text, q.id as question_id ,

        ty.name as type_name , ty.id as type_id FROM action a LEFT
JOIN test t ON t.action_code = a.code

        LEFT JOIN question q ON q.action_code = t.action_code LEFT
JOIN material m ON m.action_code = a.code LEFT JOIN article ar ON
ar.action_code = a.code LEFT JOIN type ty ON ty.id = a.type_id where a.code
= "'. $code. "'';

    // echo $sql ;

    $result = $this->connection->query($sql);

    $encode = array();

    $result2=array();

    $result3=array();

    foreach ($result as $value) {

```



```

$result2[] = $value;

$result3[] = $value;

}

foreach ($result2 as $value) {

$new = $value;

    $new['type_name']="wl_s_type-".$new['type_name'];

    $new['code']=$code;

    $new['user']=$this->selectUser($new['user_id']) ;

    if ($new['type']=='ar') {

        $article = array();

        $article['text']=$value['article_text'];

        $new['article']=$article;

    }

    else if ($new['type']=='te') {

        $test = array();

        $questions = array();

        $test['text']=$value['test_text'];

        foreach ($result3 as $v) {

            $question = array();

```

```

        $question['text']=$v['question_text'];

        $question['variants']=$this->selectVariants($v['question_id']);

        $questions[]=$question;

        }

        $test['questions']=$questions;

        $new['test']=$test;

    }

    $encode[] = $new;

    break;

}

return $encode[0];

}

```

```

function selectArticle($code){

    $sql = 'SELECT * FROM article WHERE `action_code` =
    "'. $code ."'";

    $result = $this->connection->query($sql);

    $encode = array();

    foreach ($result as $value) {

        $new = $value;

        $new['type']=$this->selectType($value['type_id']);
    }
}

```

```

        $encode[0] = $new;
    }

    return $encode;
}

```

```

function selectTest($code){

    $sql = 'SELECT t.text as test_text , q.text as question_text, v.text as
variant_text, v.istrue FROM test t LEFT JOIN question q ON q.action_code =
t.action_code

LEFT JOIN variant v ON v.question_id = q.id LEFT JOIN article ar ON
ar.action_code = a.code where t.action_code = "'.$code.'";

$result = $this->connection->query($sql);

    $encode = array();

    foreach ($result as $key => $value) {

        foreach ($value as $ke => $va) {

            }

            $new = $value;

            $encode[] = $new;

        }

    return $encode;

}

```

```

function insertArticle($action_code,$text) {

    $sqlCode = "INSERT INTO article (action_code, text)

        VALUES ('".$action_code."','".$text."');";

    if ($this->connection->exec($sqlCode)){

        $sid= $this->connection->lastInsertId();

        return $sid;

    }

}

function insertTest($action_code,$text) {

    $sqlCode = "INSERT INTO test (action_code, text)

        VALUES ('".$action_code."','".$text."');";

    if ($this->connection->exec($sqlCode)){

        $sid= $this->connection->lastInsertId();

        return $sid;

    }

}

}

```

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