

**AUTOMATIC QUESTIONS RECOMMENDATION
SYSTEM IN EXAMINATION
USING AI**

A Report for the Evaluation 3 of Project 2

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in partial fulfillment for the award of the degree

of

Bachelor of Technology

IN

Computer Science and Engineering

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING

Under the Supervision of

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APRIL/MAY-2020

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Abstract

In this millennium, the computer technology is emerging in large areas of specialization. People have been using the computer to make life easier. Internet today has become a new way of life. Every year millions of people buy computers to get connected to the World Wide Web (WWW). The Internet is expected to take over our lives. Internet is going to be used to buy groceries, pay phone and electricity bills and check your bank account. All of these can be done by using the Internet. Online services are also used in education. There are many online services such as online registrations for new students, online result to check examination result, online experiment and distance learning. Currently, we are starting to have online exam where the students can give the exam based on their intelligence using the Internet.

Students who have registered for exam will be recorded in the database. After that the website give an ID to the student where user can login for give the exam. When the students finish their final examination, the student wants to see their result. The main problem of this whole process is that the system cannot transfer the data to the students directly and they have to go through certain procedures before the students obtain the results. Moreover, the students always receive their results late. This is the main complaint that was received from the parents. In the online examination only authorized personnel are allowed to enter the grades, the overall process is very slow. To overcome these problems, this thesis proposes an online examination result. With this new system, the students can view their results faster and easier using their home computer or cyber cafe as long as the computer is connected to the Internet. Online System can reduce paperwork before producing the result. Generally, the web-based system can help the students to get faster result through the Internet. Students will have the opportunity to view their results. By using web-based online system, students will not have to wait for a long time to review their results. Moreover the test conducted will be adaptive. This means that the difficulty level of questions will upgrade or degrade according to the answers given by students in each question. For each correct answer, the difficulty level of next question will upgrade and for each wrong answer, the difficulty level of question will go down.

CHAPTER -1
INTRODUCTION

1.1 Introduction

In this millennium, the computer technology is emerging in large areas of specialization. People have been using the computer to make life easier. Internet today has become a new way of life. Every year millions of people buy computers to get connected to the World Wide Web (WWW). The Internet is expected to take over our lives. Internet is going to be used to buy groceries, pay phone and electricity bills and check your bank account. All of these can be done by using the Internet. Online services are also used in education. There are many online services such as online registrations for new students, online result to check examination result, online experiment and distance learning. Currently, we are starting to have online exam where the students can give the exam through the Internet.

Students who have registered for exam will be recorded in the database. After that the website give an ID to the student where user can login for give the exam. When the students finish their final examination, the student wants to see their result [3,4]. The main problem of this whole process is that the system cannot transfer the data to the students directly and they have to go through certain procedures before the students obtain the results. Moreover, the students always receive their results late. This is the main complaint that was received from the parents. In the online examination only authorized personnel are allowed to enter the grades, the overall process is very slow. To overcome these problems, this thesis proposes an online examination result. With this new system, the students can view their results faster and easier using their home computer or cyber cafe as long as the computer is connected to the Internet. Online System can reduce paperwork before producing the result [6,7]. Generally, the web-based system can help the students to get faster result through the Internet. Students will have the opportunity to view their results. By using web-based online system, students will not have to

wait for a long time to review their results. By using the online examination system, administrator will only input the result once and everything will be produced by the system[8].

The main features of this project are

- Secure
- Easy to use
- Reliable and accurate
- No need of examiner

The purpose of on-line test simulator is to take online test in an efficient manner and no time wasting for checking the paper. The main objective of on-line test simulator is to efficiently evaluate the candidate thoroughly through a fully automated system that not only saves lot of time but also gives fast results. For students they give papers according to their convenience and time and there is no need of using extra thing like paper, pen etc.

AI'S ROLE IN SCALING ONLINE EXAMINATION

The steep surge in adoption of AI in online education has led universities to scale online education. Centre-based tests burn a hole in students' pocket and take a toll on university's budget which goes in hiring proctors, finalizing a venue and other logistics. Meanwhile, the availability of proctors for live proctoring has become a limitation[1,2]. Not to forget the additional cost involved with it. However, with AI coming into the picture, universities are increasingly embracing auto proctored tests since they are the cheapest solution while maintaining integrity at the same time.

They can be used to efficiently evaluate the candidate thoroughly through a fully automated system that not only saves lot of time but also gives fast results.

For students they give papers according to their convenience and time and there is no need of using extra thing like paper, pen etc.

These examinations are conducted as open-book type examinations. Candidate is given a limited time to answer the questions and after the time expiry the answer paper is disabled automatically

and answers is sent to the examiner. The examiner will evaluate answers, either through automated process or manually and the results will be sent to the candidate through email or made available in the web site.

Today many organizations are conducting online examinations worldwide successfully and issue results online.

There are advantages and disadvantages in online examinations. The main advantage is that it can be conducted for remote candidates and evaluation of answers can be fully automated for Multiple Choice questions and other essay type questions can be evaluated manually or through automated system, depending on the nature of the questions and the requirements. Also online examinations can be conducted at any time and does not incur higher cost as traditional exam scenario as there is no paper work involved(eg: printing exam papers, prepare paper admissions etc) , there is no invigilators, also no need of arrangement of exam centers. When comparing with traditional exam scenario the cost for an online examination will be almost zero after the online exam system is establishment and if maintenance cost is not considered.

The disadvantage of the e-examination is the inability of invigilating. There are methodologies used in these examinations, when registering candidates and presentation of questions, so that to test candidates knowledge and skills. However with a limited time, candidate is not capable of totally depend on the reference materials or a supporting person.

CHAPTER-2
PROPOSED SYSTEM

MODULES

This project can be divided into following modules:-

- Home
- Login
- Test
- Result

HOME:

It often refers to the initial or main webpage of a web site, sometimes called the front page. The web page or local file that automatically loads when a web browser starts or when the web browser's "Home" button is pressed, this is also called a start page. Home pages contain the main information about a website. They contain links to other parts of the website.

LOGIN:

There is a quality login window because this is more secure than other login forms. As in a normal login window, there are multiple logins available so that more than one person can access to test with their individual login. But in this project, there is only one login ID, i.e., administrator ID and password by which a person enters the site. Hence, it is more secure than previously used on-line test simulators.

TEST:

The Test page is the most creative and important page in this project .In this module, the member of the website who wants to appear for the test can give the exam. They have to register for the exam. After the registration user's login provide ID is provided to the person at the registration form. After the login the user can give the exam.CAT successively selects questions for the purpose of maximizing the precision of the exam based on what is known about the examinee from previous questions. From the examinee's perspective, the difficulty of the exam seems to tailor itself to their level of ability. For example, if an examinee performs well on an item of intermediate difficulty, they will then be presented with a more difficult question. Or, if they performed poorly, they would be presented with a simpler question. Compared to static multiple choice tests that nearly everyone has experienced, with a fixed set of items administered to all examinees, computer-adaptive tests require fewer test items to arrive at equally accurate scores. (Of course, there is nothing about the CAT methodology that requires the items to be multiple-choice; but just as most exams are multiple-choice, most CAT exams also use this format.

TEST 1.1:

The basic computer-adaptive testing method is an iterative algorithm with the following steps:

1. The pool of available items is searched for the optimal item, based on the current estimate of the examinee's ability.
2. The chosen item is presented to the examinee, who then answers it correctly or incorrectly.
3. The ability estimate is updated, based upon all prior answers.
4. Steps 1–3 are repeated until a termination criterion is met.

RESULT:

Once a candidate has successfully completed the test, evaluation will be done within a day and the candidate can view the result from any device (smartphone, laptop etc) he/she wants to. Generally, the web-based system can help the students to get faster result through the Internet.

Students will have the opportunity to view their results. By using web-based online system, students will not have to wait for a long time to review their results.

CHAPTER-3

HARDWARE AND SOFTWARE SPECIFICATION

3.1 HARDWARE & SOFTWARE Requirements

HARDWARE INTERFACE REQUIREMENTS:

Our product will require at least a PowerPC Macintosh or a Pentium class PC with 64 MB of RAM (64+ recommended), and color display.

SOFTWARE REQUIREMENTS:-

Front End:-

JAVA

Visual Studio 2010

Back End:-

SQL Server 2008

Other Software Components:

Operating System: Window XP/NT/2000

CHAPTER-4

TECHNOLOGY USED

4.1 TECHNOLOGY USED

4.1.1.1 WORLD WIDE WEB

1. Internet:-

Internet is a network, which consists of millions of machines. It is a well-designed network, which gives each machine that is in the cumulative power of all its component machines. Data required may be scattered across the globe updated and kept consistent by the owner of the data. We can retrieve it when needed by the Internet.

2. Browser:-

The short answer to this is that one needs a Browser to access the vast amount of information that is on the World Wide Web. It is a software program, which is present on the client side. One can choose many web Server packages. All have in common the use of HTML and the HTTP protocol.

3. Web Server and HTTP:-

A web server is a program that answers request for documents from clients (browsers) over the Internet. Web Server's performs a number of tasks such as:

- Logging activity
- Authentication users.

- Recording the Internet address, the time and the details of request made from each connection.
- Protecting files from unauthenticated users.
- Accepting and forwarding requests for data.

Web servers transfer hypertext documentation using HTTP protocol. This protocol is stateless. The server simply receives a request from the browser, at which time a connection is established, and sends back the requested data, after which the connection is served.

4. HTTP Transaction:-

All HTTP transaction i.e. Communication between the server and the browser takes place with the help of a TCP/IP connection, HTTP transaction consists of four phases:-

Connection:

In this phase the browser attempts to establish a connection with the web server. After a connection has been established, it waits for a reply from the server. On getting a reply from the server a two-way communication between the browser and the server is established and the next phase begins.

Request:

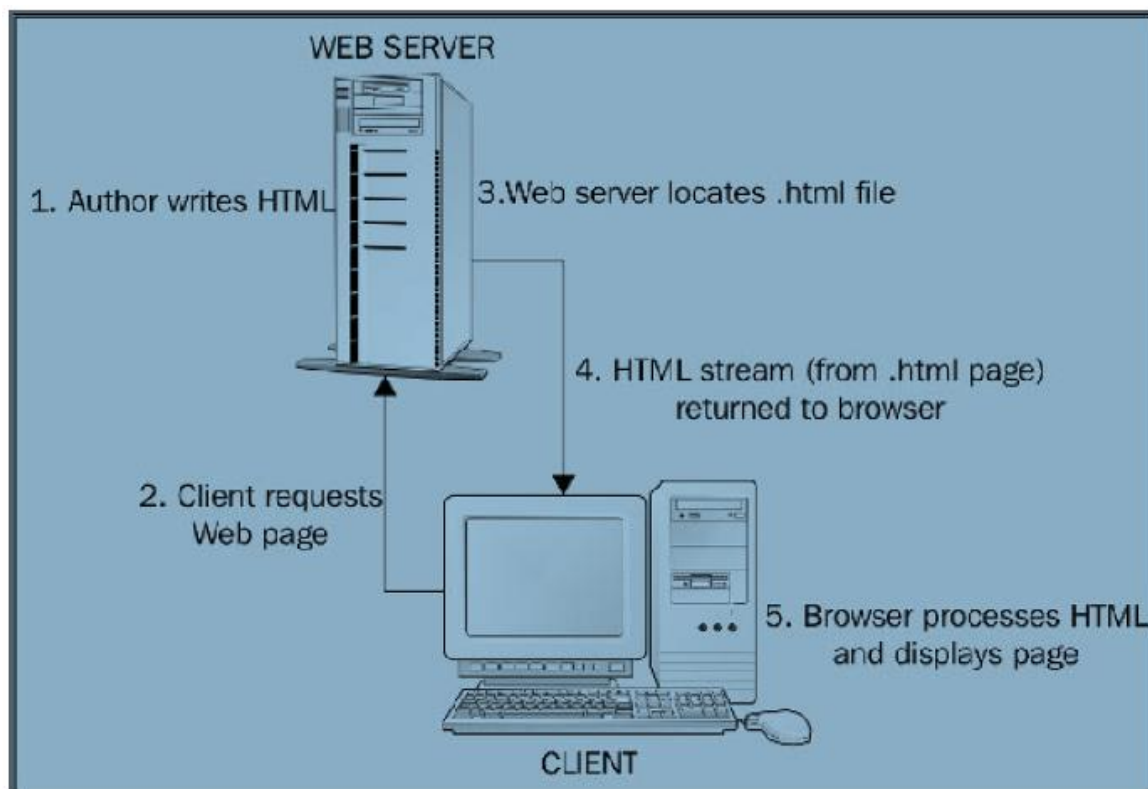
Once the connection has been established the browser sends a request to the server. This request specifies the protocol to be used and how the browser wants the server to respond to the request.

Response:

On fulfilling the request the server sends a response to the browser. At this stage some browsers display a message reading file or transferring document on the status line. The server tries to send the MIME types supported by the browser. The server first sends the MIME type of data that is being sent and then sends the data. If there is no such program available the browser gives an option of saving the document so that it can be viewed later by using suitable tool.

Close: After getting the response from server, the connection between the browser and the server is terminated and the browser handles the data.

- A Web Author writes a page using only HTML and saves it within an .htm file on the Web server.
- Sometime later, a user types a *page request* (URL) into a browser, and the request passes from the browser to the Web server.
- The Web server locates the .htm page and converts it to an HTML stream.
- The Web server sends the HTML stream back across the network to the browser.
- The browser processes the HTML and displays the page.



➤ **WEB SERVERS:**

Web servers are software that manage Web pages and make them available to client browsers – via a local network or over the Internet. In the case of the Internet, the Web server and browser are usually on two different machines, possibly many miles apart. However, in a local situation

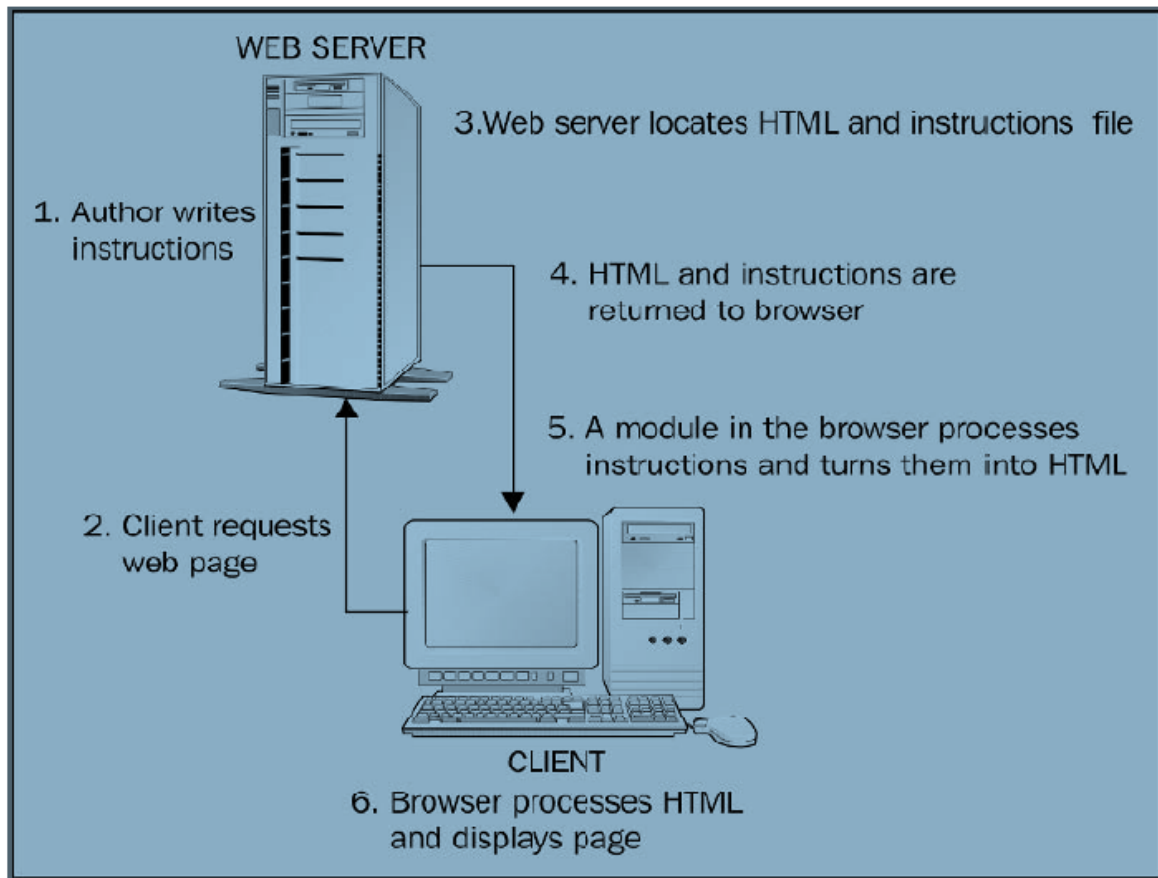
we can set up a machine that runs the Web server software, and then use a browser on the same machine to look at its Web pages.

It makes no difference whether we access a remote Web server (a Web server on a different machine from our browser) or a local one (Web server and browser on the same machine), since the Web server's function – to make Web pages available to all – remains unchanged. It may be that we are the only person with access to our own machine nevertheless the principles remain the same.

➤ **CLIENT-SIDE DYNAMIC WEB PAGE:**

In the client-side model, modules (or plug-ins) attached to the browser do all the work of creating dynamic pages. The HTML code is typically sent to the browser along with a separate file containing a set of instructions, which is referenced from within the HTML page. However, it is also quite common to find these instructions intermingled with HTML code. The browser then uses them to generate pure HTML for the page when the user requests the page – in other words, the page is generated dynamically on request. This produces an HTML page, which is sent back from the plug-in to the browser.

- A Web author writes a set of instructions for creating HTML and saves it within an .html file. The author also writes a set of instructions in a different language. This might be contained within the .html file or within a separate file.
- Sometime later, a user types a page request into the browser, and the request is passed from the browser to the Web server.
- The Web server locates the .html page and possibly a second file that contains the instructions.
- The Web server sends both the newly created HTML stream and instructions back across the network to the browser.
- A module within the browser processes the instructions and returns it as HTML within the .html page – only one page is returned, even if two were requested.
- The HTML is then processed by the browser, which displays the page.

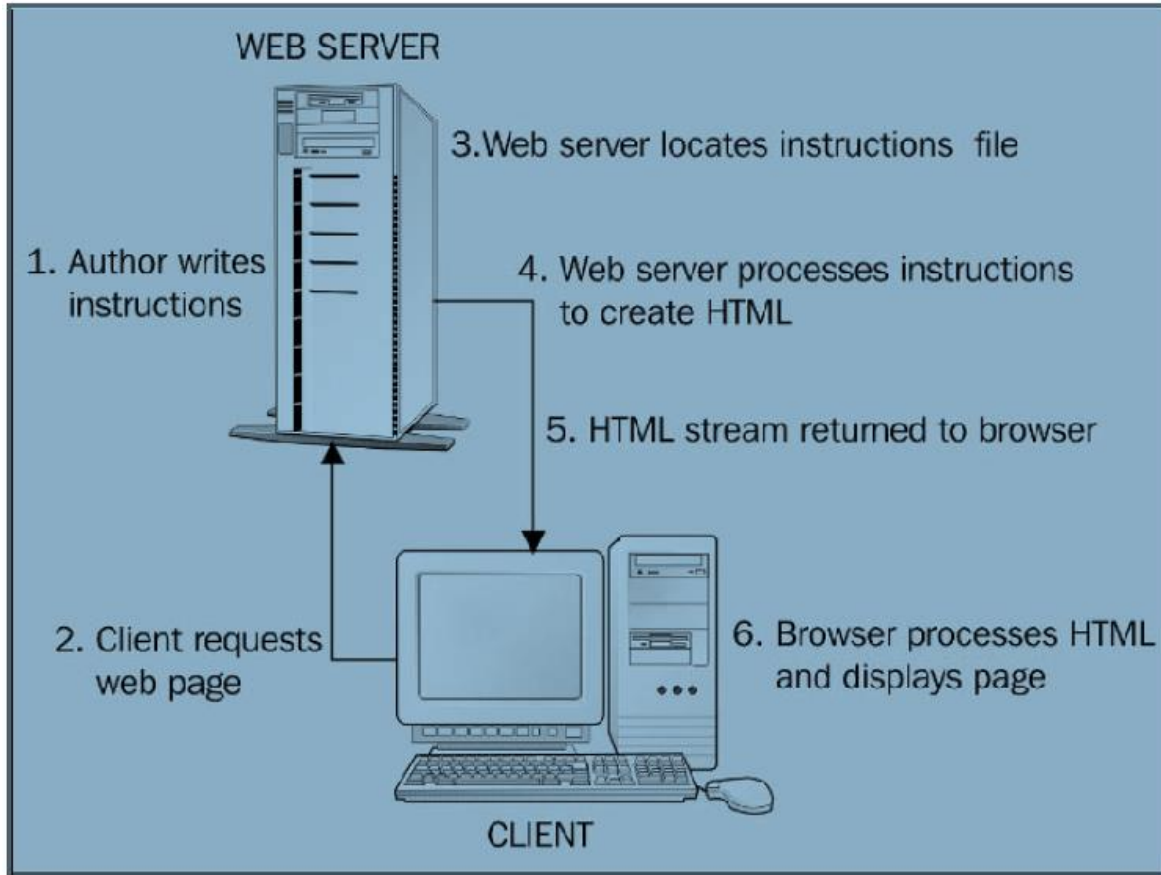


➤ **SERVER SIDE DYNAMIC WEB PAGE:**

With the server-side model, the HTML source is sent to the Web server with an extra set of instructions (that can be intermingled or sent separately). This set of instructions is again used to generate HTML for the page at the time the user requests the page. Once again, the page is generated dynamically upon request.

- A Web author writes a set of instructions for creating HTML and saves these instructions within a file.
- Sometime later, a user types a page request into the browser, and the request is passed from the browser to the Web server.
- The Web server locates the file of instructions.
- The Web order to create a stream of HTML server follows the instructions in.

- The Web server sends the newly created HTML stream back across the network to the browser.
- The browser processes the HTML and displays the page.



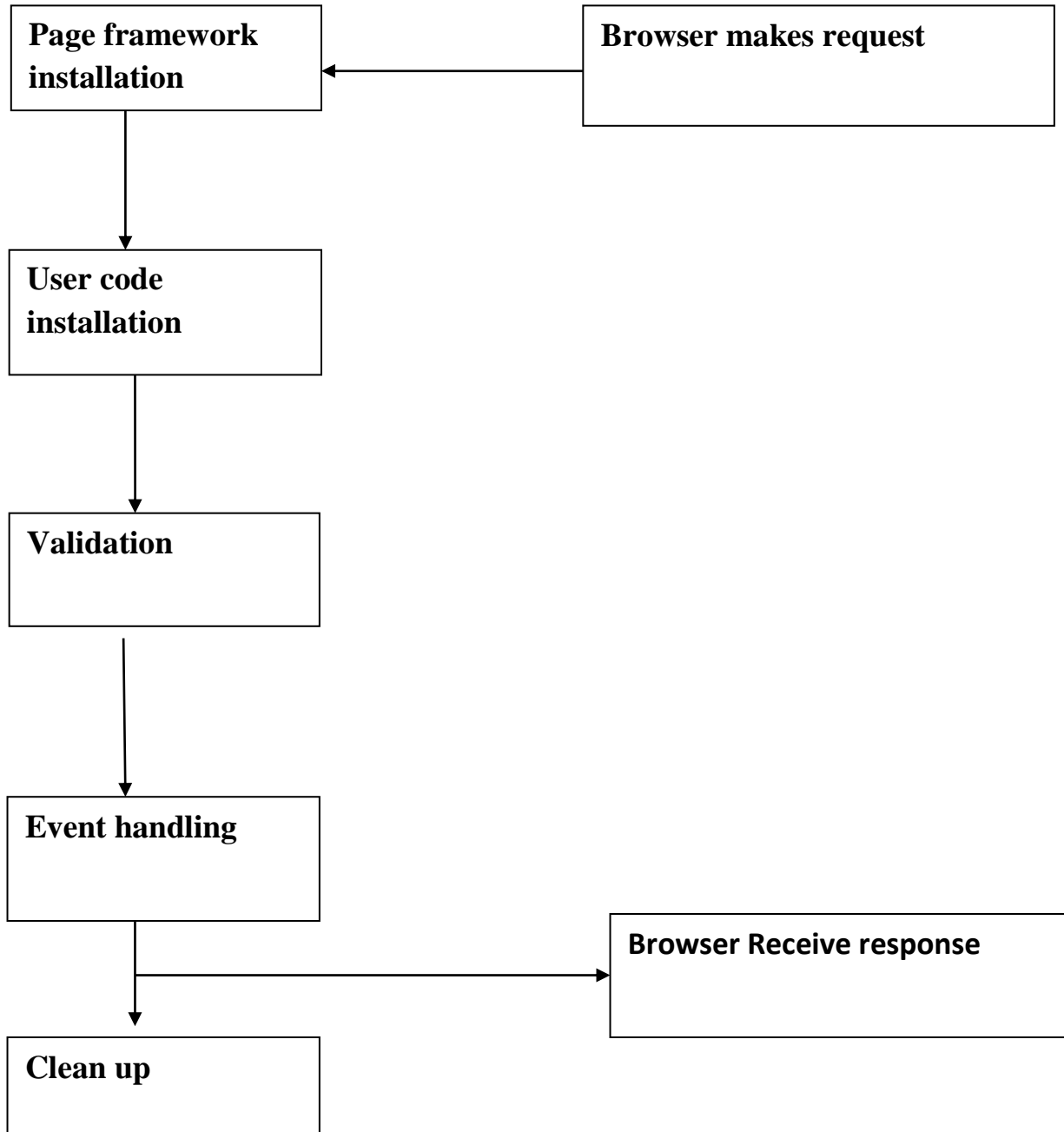
4.2.2 ASP.NET SERVER CONTROLS

ASP.NET server controls are also called Web Controls.

ASP.NET Web Control	Similar HTML Form Tag	Purpose
<asp:Label>	, <Div>, simple text	Display text

<asp:ListBox>	<Select>	Offer the user a list of items from which to select.
<asp:DropDownList>	<Select>	Offer the user a list of items from which to select in a compact format
<asp:TextBox>	<Input Type="Text">	Accept typed input from user
<asp:RadioButton> and <asp:RadioButtonList>	<Input Type="Radio">	Allow user to make one selection from a list of options.
<asp:CheckBox> and <asp:CheckBoxList>	<Input Type="CheckBox">	Allow user to turn a feature on or off
<asp:Button>	<Input Type="submit">	Send the user's input to the server

4.3 JAVA PAGE FRMAEWORK



4.4 SQL SERVER

SQL Server is one of the most popular RDBMS of today. Its Popularity is owned to a number of factors like its ability to support dozens to thousands of simultaneous users, its ability to handle high transaction rates and its ability to access databases that ranges in size from several hundred megabytes to many gigabytes.

SQL Server 2008:

It is based on new architecture; know as NCA (Network Computing Architecture). NCA is a three-tiered architecture as opposed to client/server architecture that is two tiered.

4.4.2 FEATURES OF SQL Server

- **Security Management:** SQL Server provides a controlled access to data to users by providing a combination of privileges.
- **Backup and Recovery:** SQL Server provided sophisticated security backup and recovery routines.
- **Open connectivity:** SQL Server provides open connectivity to and from other vendor's software such as Microsoft. Also SQL Server database can be access by various front-end software's such as Microsoft Visual Basic, Power Builder etc.
- **Space Management:** In SQL Server once can flexibly allocate disk spaces for data storage and can control them subsequently. SQL Server 8 is designed with special feature of data warehousing

The reason for choosing SQL SERVER as RDBMS is because; one of SQL's greatest benefits is that it is a truly cross-platform language and a cross-product language. It is also what programmers refer to as a high-level or fourth-generation language (4GL), in which a large amount of work can be in fewer lines of code. SQL is the de facto standard language used to manipulate and retrieve data from these relational database.

CHAPTER -5

SOFTWARE DEVELOPMENT LIFE CYCLE USED

5.1 SDLC DESCRIPTION:

The Online-examination applied the classical Life Cycle paradigms. A software development process, also known as a software development life cycle (SDLC), is a structure imposed on the development of a software product. Similar terms include software life cycle and software process. It is often considered a subset of system development life cycle. There are several models for such process, each describing approach to a variety of tasks or activities that take place during the process.

For Example, there are many specific software development process that 'fit' the spiral model. ISO/IEC 12207 is an international standard for software lifecycle processes. It aims to be the standard that defines the tasks required for developing and maintaining software.

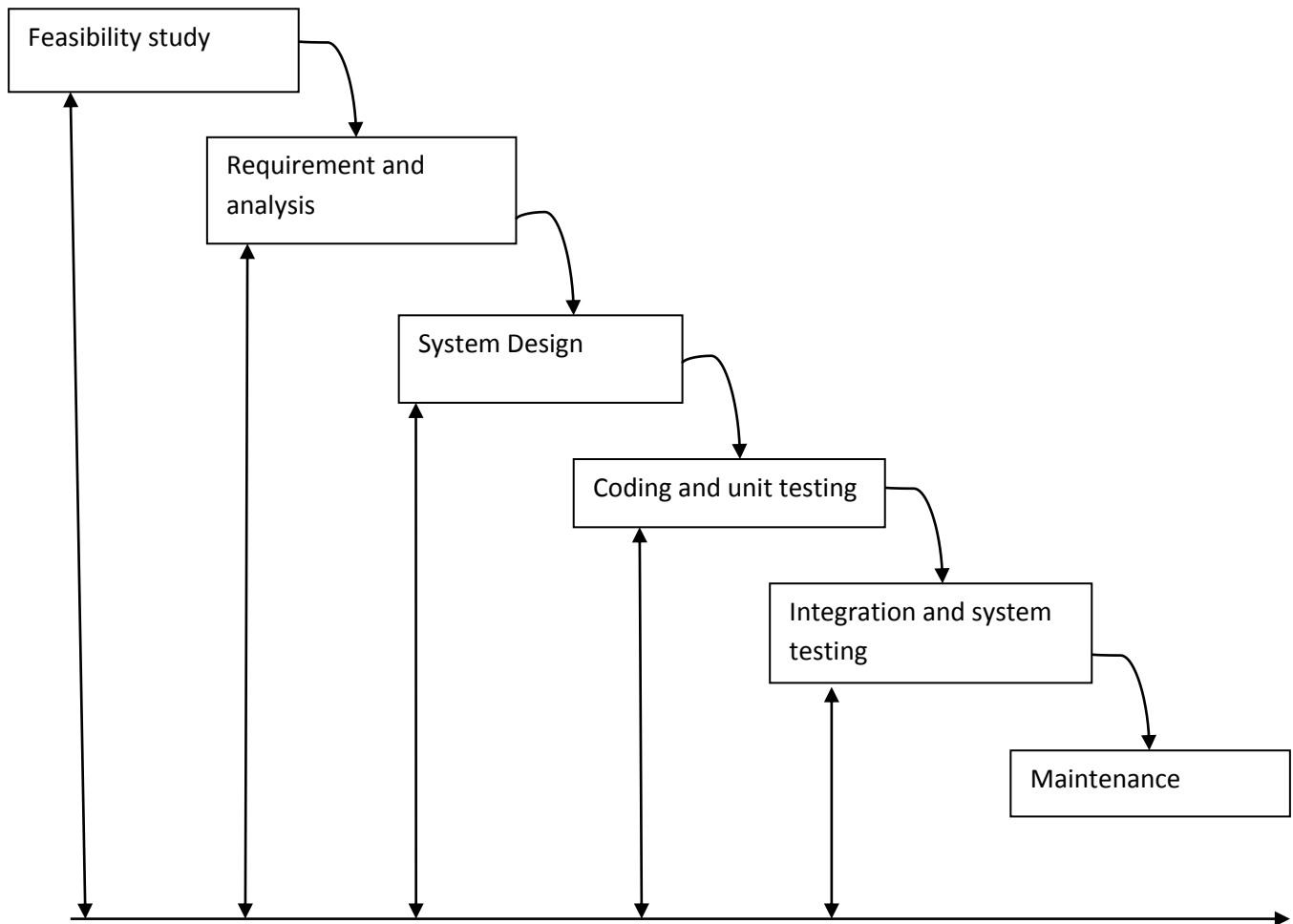
Linear ordering of activities has some important consequences. First to clearly identify the end of a phase and the beginning of the next, some certification mechanism has to be employed at the end of each phase. This is usually done by the some verification and validation means that will ensure that the output of a phase is consistent with the input of the phase, and that the output of the phase is consistent with the overall requirements of the system. The consequence of the need for certification is that each phase must have some defined output that can be evaluated and certified. The outputs of the phases are often called work products and are usually in the form of documents like requirements document or design document. For the coding phase, the output is code.

There are two basic assumptions for justifying the linear ordering of the phases in the manner proposed by the waterfall model :

- For a successful project resulting in a successful product, all phases listed in the waterfall model must be performed anyway.
- Any different ordering of the phases will result in a less successful product. A successful software product is one that satisfies all the objectives of the development project. These objectives include satisfying the requirements and performing the development within the time and cost constraints.

5.2 The life Cycle paradigm encompasses the following activities:-

- Software Requirement Analysis
- Project planning.
- Design.
- Coding.
- Testing.
- Maintenance.



FEASIBILITY STUDY

1.) ECONOMIC FEASIBILITY

Economic analysis is most frequently used for evaluation of the effectiveness of the system. More commonly known as cost/benefit analysis the procedure is to determine the benefit and saving that are expected from a system and compare them with costs, decisions are made to design and implement the system. This part of feasibility study gives the top management the economic justification for the new system. This is an important input to the management, because very often the top management does not like to get confounded by the various technicalities that are bound to be associated with a project of this kind. A simple economic analysis that gives the actual comparison of costs and benefits is much more meaningful in such cases.

In the system, the organization is most satisfied by economic feasibility. Because, if the organization implements this system, it need not require any additional hardware resources as well as it will be saving a lot of time.

2.) TECHNICAL FEASIBILITY

Technical feasibility centers on the existing manual system of the test management process and to what extent it can support the system. According to feasibility analysis procedure the technical feasibility of the system is analyzed and the technical requirements such as software facilities, procedure, inputs are identified. It is also one of the important phases of the system development activities. The system offers greater levels of user friendliness combined with greater

processing speed. Therefore, the cost of maintenance can be reduced. Since, processing speed is very high and the work is reduced in the maintenance point of view management convinces that the project is operationally feasible.

3) BEHAVIOURAL FEASIBILITY

People are inherently resistant to change and computer has been known to facilitate changes. An estimate should be made of how strong the user is likely to move towards the development of

computerized system. These are various levels of users in order to ensure proper authentication and authorization and security of sensitive data of the organization.

PLANNING:

The Planning Phase focuses principally on required project planning work. Proper comprehensive project planning is essential to a successful IT project, and incomplete project planning and analysis are frequently root causes of project failure. Most project planning is conducted as part of the PMBOK Integration Management work, which includes defining the processes necessary to identify, define, combine, unify, and coordinate all project activities for successful project deployment. Everything starts with a concept. It could be a concept of someone, or everyone. However, there are those that do not start out with a concept but with a question, “What do you want?” they ask thousands of people in a certain community or age group to know what they want and decide to create an answer. But it all goes back to planning and conceptualization. It is also essential for developers to know that this stage deals a lot with upper management so if you are not the owner of the software development company; you have to deal with them a lot in this stage.

Implementation:-

The first two stages are quite common in all SDLC models. However, things change starting on this stage. When the design and all the things that you need have been laid out, it is time to work on the plan. Some developers, especially those that follow the standard plan of developing software will work on the plan and present them for approval.

Maintenance:-

When the software is implemented, it does not mean that the software is good as it is. All SDLC models include maintenance since there are absolutely no way that a software will be working perfectly. Someone has to stay in the present software to take a look and ensure the program works perfectly. When the software is implemented in public. Software companies either set up a call center or an e-mail service to address the concerns of the consumer. As we have indicated in previous chapters, Maintenance is quiet an easy task as long as the right food and product is serve in an expected time frame. However, it is always a challenge when something goes wrong.

CHAPTER-6
EXISTING SYSTEM

EXISTING SYSTEM:-

The whole process of assigning test and evaluating their scores after the test, was done manually till date. Processing the test paper i.e. checking and distributing respective scores used to take time when the software was not installed.

DISADVANTAGES OF CURRENT SYSTEM:-

- The current system is very time consuming.
- It is very difficult to analyze the exam manually.
- To take exam of more candidates more invigilators are required but no need of invigilator in case of on line exam.
- Results are not precise as calculation and evaluations are done manually.
- The chances of paper leakage are more in current system as compared to proposed system.
- Result processing takes more time as it is done manually.

CHARACTERSTIC OF THE PROPOSED SYSTEM:-

The online test created for taking online test has following features:-

- In comparison to the present system the proposed system will be less time consuming and is more efficient.
- Analysis will be very easy in proposed system as it is automated
- Result will be very precise and accurate and will be declared in very short span of time because calculation and evaluations are done by the simulator itself.
- The proposed system is very secure as no chances of leakage of question paper as it is dependent on the administrator only.
- The logs of appeared candidates and their marks are stored and can be backup for future use

CHAPTER -7

DESIGN

7.1. INTRODUCTION :-

The aim of system design, which is sometimes also referred to as **top-level design**, is to identify the modules that should be in the system, the specifications of these modules, and how they interact with each other to produce the desired results. At the end of the system design all the major data structures, file formats, output formats and the major modules in the system and their specifications are needed.

7.2 DESIGN OBJECTIVES:-

Primary objective of design is to deliver the requirements as specified in the feasibility report. Following objectives should be kept in mind: -

➤ **PRACTICALITY:-**

The system must be stable and can be operated by people with average intelligence.

➤ **EFFICIENCY :-**

This involves accuracy, timeliness and comprehensiveness of the system output.

➤ **COST :-**

It is desirable to aim for a system with a minimum cost subject to the condition that it must satisfy all the requirements.

➤ **FLEXIBILITY:-**

The system should be modifiable depending on the changing needs of the user. Such modifications should not entail extensive reconstruction or recreation of software. It

should also be portable to different computer systems.

➤ **SECURITY :-**

This is very important aspect of the design and should cover areas of hardware reliability, fall back procedures, physical security of data and provision for detection of fraud and abuse.

7.3 SOFTWARE DESIGN:-

Software design is an iterative process through which requirements are translated into a “blueprint” for constructing the software. Characteristics that serve as a guide for the evaluation of a good design: -

- The design must implement all of the explicit requirements contained in the analysis model, and it accommodate all of the implicit requirements desired by the customer.
- The design must be a readable, understandable guide for those who generate code and for those who test and subsequently maintain the software.
- The design should provide a complete picture of the software, addressing the data, functional, and behavioral domains from an implementation perspective.

7.4 DESIGN QUALITY CRITERIA

- A design should exhibit a hierarchical organization that makes intelligent use of control among the elements of software.
- A design should be modular i.e. the software should be logically partitioned into elements that perform specific functions and sub-functions.
- A design should contain both data and procedural abstraction.

- A design should lead to module that exhibit independent functional characteristics
- A design should lead to interfaces that reduce the complexity of connections between modules and with the external environment.
- A design should be derived using a repeatable method that is driven by information obtained during software requirement analysis.

All these things are implemented in our project using options on the main menu screen. Each option provides a different kind of information, providing modular approach. Data is submitted to the database as server side programming, which gives abstraction to the data using middle tier concepts with fully Object-Oriented programming.

7.5 DESIGN CONCEPTS:

A set of fundamental software design concepts has evolved: -

- What criteria can be used to partition software into individual components?
- How is function or data structure detail separated from a conceptual representation of the software?
- Are there uniform criteria that define the technical quality of a software design?

7.5.1 TOP-DOWN AND BOTTOM UP STRATEGIES:

A system consists of components, which have the components of their own, indeed a system is a hierarchy of components. The highest level component corresponds to the total system.

A top-down design approach starts with identifying the major components of the system, decomposing them into their low-level components and iterating until the desired level of detail is achieved. Top-down design methods often result in some form of stepwise refinement. Starting from an abstract design, in each step the design is refined to a more concrete level, until we reach a level where no more refinement is needed and the design can be implemented directly.

A bottom-up design approach starts with designing the most basic or primitive components and proceeds to higher-level components that use these lower-level components. Bottom-up methods works with layers of abstraction. Starting from the very bottom, operations that provide a layer of abstraction are implemented. The operations of this layer are then used to implement more powerful operations and a still higher layer of abstraction, until the stage is reached where the operation supported by the layer are those desired by the system.

7.6 ABSTRACTION:-

The psychological notion of “abstraction” permits one to concentrate on a problem at some level of generalization without regard to irrelevant low level details; use of abstraction also permits one to work with concepts and terms that are familiar in the problem environment without having to transform them to an unfamiliar structure...”

- **Procedural abstraction**
- **Data abstraction**

PROCEDURAL ABSTRACTION:-

It is a named sequence of instructions that has a specific and limited function.

DATA ABSTRACTION:-

It is a named collection of data that describes a data object.

7.7 REFINEMENT

Stepwise refinement is a top-down strategy and the architecture of a program is developed by successive refining levels of procedural details. “In each step of refinement, one or more instructions of the given program are decomposed into more detailed instructions. This successive decomposition or refinement of specifications terminates when all instructions are expressed in terms of an underlying computer or programming languages... As tasks are refined, so the data may have to be refined, decomposed, or structured, and it is natural to refine the program and the data specifications in parallel.”

Every solution is always refinable depending on time period and availability of information.

7.8 MODULARITY:-

“Modularity is the single attribute of software that allows a program to be intellectually manageable”. Monolithic software can't be easily grasped by a reader. The number of control paths, span of reference, number of variables, and overall complexity would make understanding close to impossible.

STRUCTURED DESIGN:-

Structured design methodology views every software system as having some inputs that are converted into the desired outputs by the software system. The software is viewed as a transformation function that transforms the given inputs into the desired outputs, and the central problem of designing this transformation function. Due to this view of software, the structured design methodology is primarily function oriented and relies heavily on functional abstraction and functional decomposition. The approach begins with a system specification that identifies inputs and outputs and describes the functional aspects of the system. The next step is the definition of the modules and their relationship with one another in a form called a structure chart, using data dictionary and other structured tools.

DATA DICTIONARY:-

Data dictionary is a repository of various data flows defined in data flow diagram. The associated data dictionary states precisely the structure of each data flow in DFD.

Although the format of dictionaries varies from tool to tool, most consists of the following information:-

- Name – the primary name of the data or control item, the data store or an external entity.
- Alias – other names used for the first entry.
- Where-used/how-used – a listing of the processes that used the data or control item and how it is used (E.g. input to the process, output from the process, as a store, as an external entity).
- Content description – a notation for representing content.
- Supplementary information – other information about data types, preset values (if known), restrictions of limitation.

7.9 DETAILED DESIGN:-

During detailed design, the internal logic of each of these modules specified in system design is decided. During this phase further details of data structures and algorithmic design of each of the modules is specified. The logic of a module is specified in a high-level design descriptive language, which is independent of the target language in which software will eventually be implemented.

7.9.1. DATA DESIGN:-

The Data design transforms the information domain model created during analysis into the data structures, that will be required to implement the software. The data objects and the relationships defined in the entity relationship diagram and the detailed data content depicted in the data dictionary provide the basis for the data design activity.

7.9.1.1 ARCHITECTURAL DESIGN:-

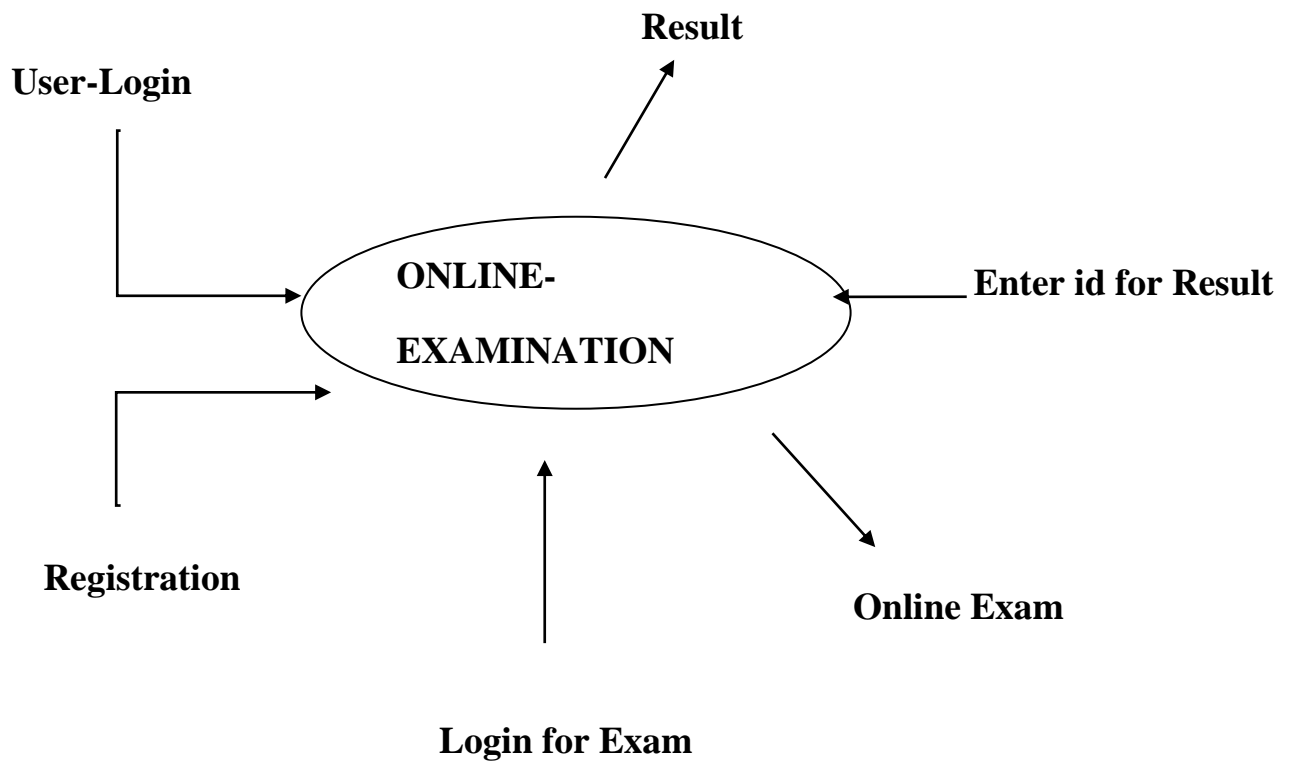
Architectural design represents the structure of data and program components that are required to build a computer based system. It considers the architectural style that the system will take, the structure and properties of the components that constitute the system, and the interrelationships that occur among all architectural components of a system. The architectural design defines the relationship between major structural elements of the software, the “ design patterns” that can be used to achieve the requirements that have been defined for the system, and the constraints that affect the way in which architectural design patterns can be applied. The architectural design representation-the framework of a computer based system-can be derived from the system specification, the analysis model and the interaction of subsystems defined within.

7.9.1.2 DATA FLOW DIAGRAMS:-

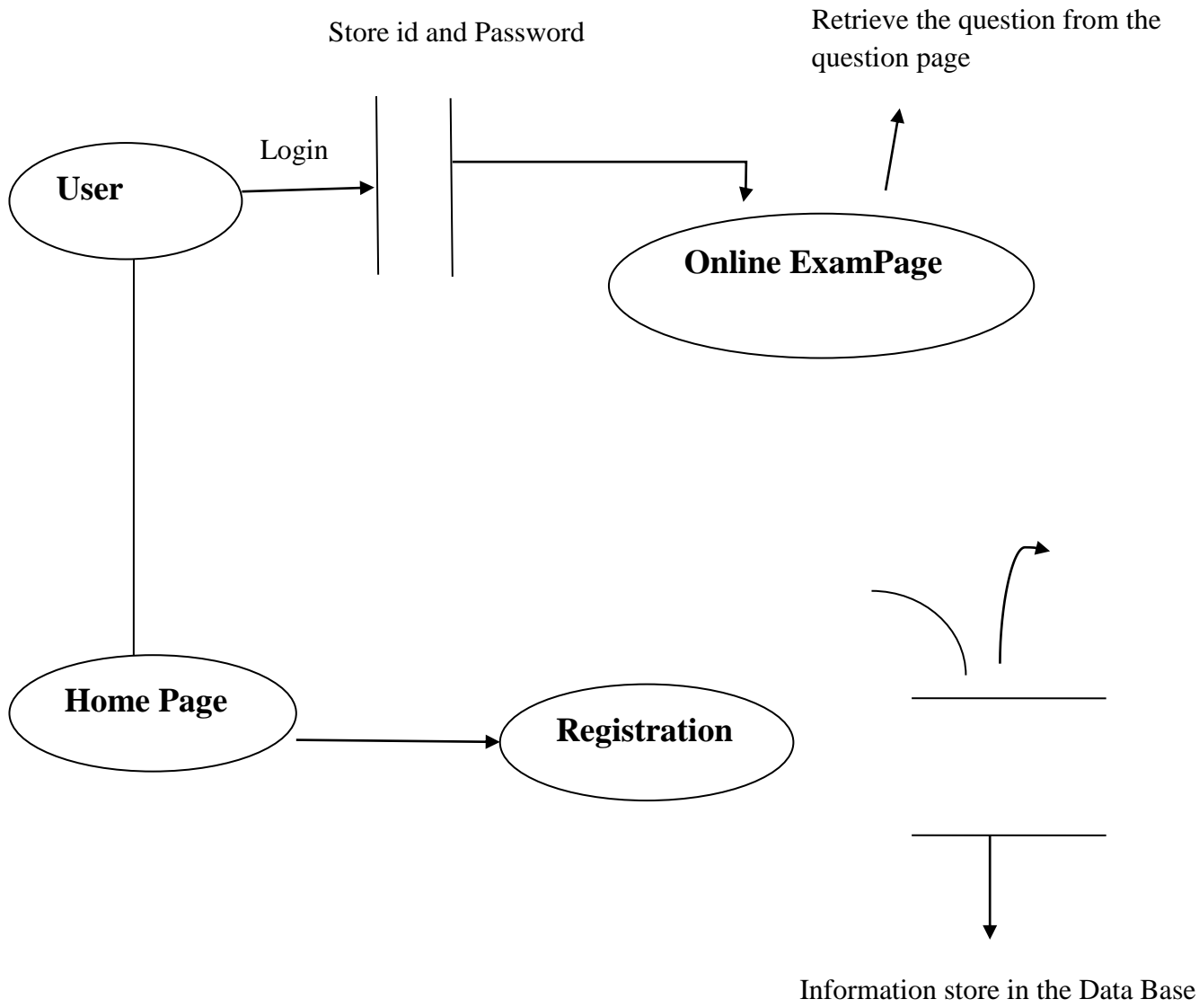
DFD's are commonly used during problem analysis. Data flow diagrams are not limited to problem analysis for software requirement specification. A DFD shows the flow of data through the system. It views a system as a function that transforms the inputs into desired outputs. The DFD aim to capture the transformations that take place within a system to the input data so that eventually the output data is produced. The agent that performs the transformation of data from one state to another is called a process (or bubble). The processes are shown by named circles and data flows are represented by named arrows entering or leaving the bubbles. A rectangle represents a source or sink and is a net originator or consumer of data.

It should be pointed out that DFD is not a flowchart. A DFD represents the flow of data, while a flowchart shows the flow of control. A DFD does not represent procedural information. In drawing the DFD the designer has to specify the major transforms in the path of the data flowing from input to output.

DATA FLOW DIAGRAM



Zero- Level DFD



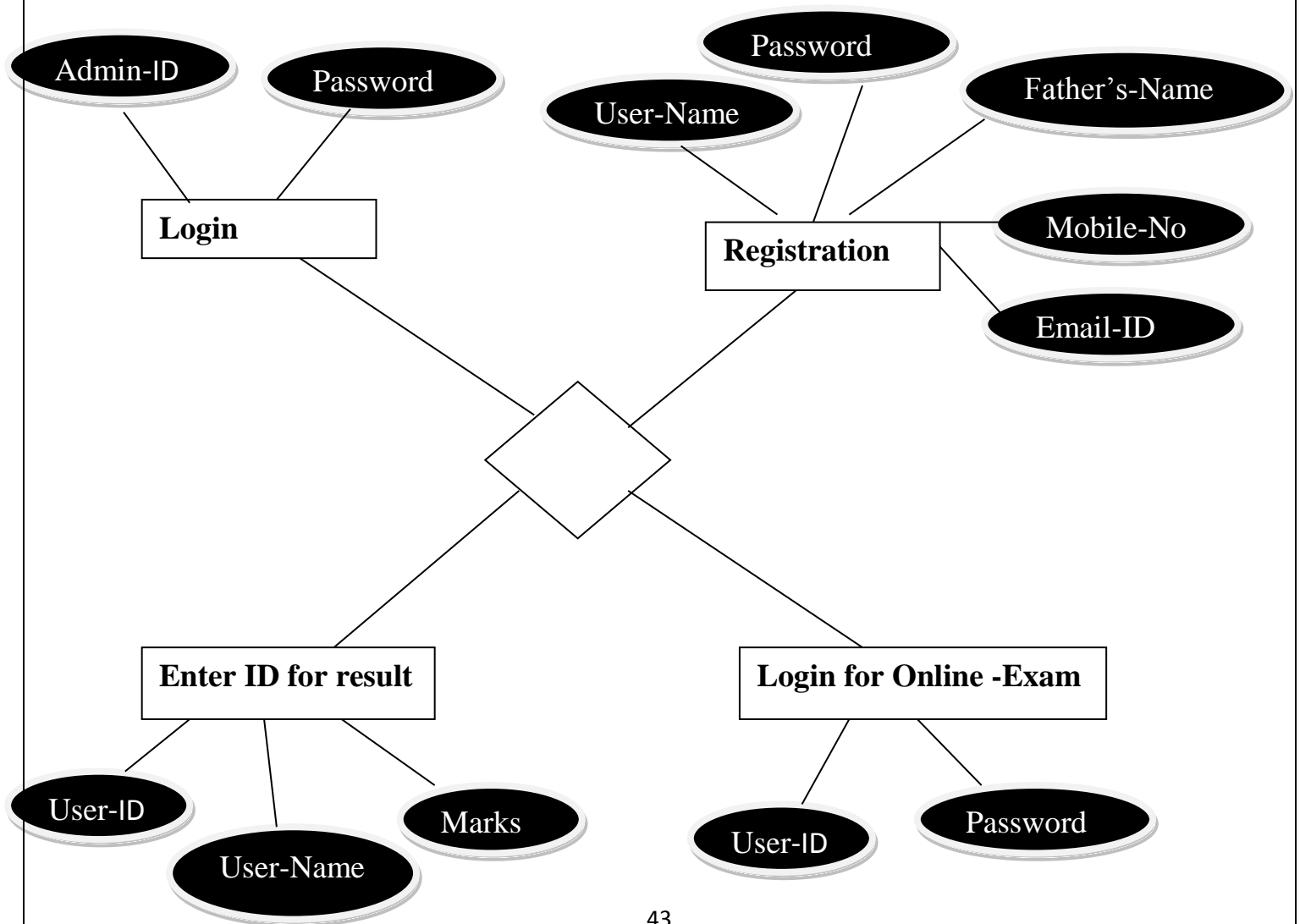
One-Level DFD

7.9.1.3 Entity-relationship diagram:-

The E-R diagram enables a software engineer to fully specify the data objects that are input and output to/from a system, the attributes that define the properties of these objects, and the relationship between the objects. The following approach is taken: -

- During requirements gathering, customers are asked to list the “things” that the application or business process addresses. These “things” evolve into a list of input and output data, objects as well as external entities that produce or consume information.
- Taking the objects one at a time, the analyst and customer define whether or not a connection (unnamed at this stage) exists between the data, object and other objects.
- Wherever a connection exists, the analyst and customer create one or more object-relationship pairs.
- For each object-relationship pair, cardinality and modality are explored.
- Steps 2 through 4 are continued iteratively until all object-relationship pairs have been defined. It is common to discover omissions as this process continues. New objects and relationships will invariably be added as the numbers of iterations grows.
- The attributes of each entity are defined. An entity-relationship diagram is formalized in review.

E-R Diagram



DATABASE TABLE

User Table:

Name	Data Type	Description
User ID	Text	ID of the user
Password	Text	Password

Question Table:

Name	Data Type	Description
Ques_no.	Number	Ques_Number
Question	Text	Question
Answer1	Text	First Choice
Answer2	Text	Second Choice
Answer3	Text	Third Choice
Answer4	Text	Fourth Choice

Answer Table:-

Name	Data Type	Description
Ans_no.	Number	Ans_no.
Answer	Text	Answer
Correct_ Answer	Text	Correct Answer

Result Table:

Name	Data Type	Description
User_ID	Text	ID of the User
Name	Text	Name of the User
Marks	Number	Marks Obtained

Admin Database:

The screenshot displays the Microsoft SQL Server Management Studio interface. The Object Explorer on the left shows the server hierarchy, with the 'Exam' database selected. The central pane shows the 'dbo.Admin' table structure with two columns: 'id' (varchar(50)) and 'Pass' (varchar(50)). The Properties pane on the right shows the table's identity and designer settings.

Column Name	Data Type	Allow Nulls
id	varchar(50)	<input type="checkbox"/>
Pass	varchar(50)	<input type="checkbox"/>

Table Properties:

- (Name): Admin
- Database Name: Exam
- Description:
- Schema: dbo
- Server Name: admin-pc
- Identity Column:
- Indexable: Yes
- Lock Escalation: Table
- Regular Data Space: PRIMARY
- Replicated: No
- Row GUID Column:
- Text/Image Filegr: PRIMARY

Column Properties (id):

- (Name): id
- Allow Nulls: No
- Data Type: varchar
- Default Value or Binding:
- Length: 50

Registration:-

The screenshot displays the Microsoft SQL Server Management Studio interface. The Object Explorer on the left shows the server hierarchy, with the 'dbo.Registration' table selected under the 'Exam' database. The central pane shows the table's structure:

Column Name	Data Type	Allow Nulls
id	int	<input type="checkbox"/>
ename	varchar(50)	<input type="checkbox"/>
Password	varchar(50)	<input type="checkbox"/>
F_name	varchar(50)	<input type="checkbox"/>
Phone_no	varchar(50)	<input type="checkbox"/>
Email_id	varchar(50)	<input type="checkbox"/>

The 'Column Properties' window at the bottom shows the configuration for the 'id' column:

- General:** (Name) id, Allow Nulls No, Data Type int.
- Table Designer:** Collation <<database.default>>
- (General):** (empty)

The Properties window on the right shows the table's metadata:

- (tbl) dbo.Registration**
- (Identity):** (Name) Registration, Database Name Exam, Description, Schema dbo, Server Name admin-pc.
- Table Designer:** Identity Column id, Indexable Yes, Lock Escalation Table.
- Regular Data Space:** PRIMARY, Replicated No, Row GUID Column, Text/Image Filegr: PRIMARY.
- (Identity):** (empty)

Student table:-

The screenshot displays the Microsoft SQL Server Management Studio interface. The Object Explorer on the left shows the 'Exam' database structure, including tables like 'student'. The central pane shows the table structure for 'dbo.student' with columns: 'id' (varchar(20), primary key), 'name' (varchar(20)), and 'marks' (varchar(20)). The right pane shows the 'Properties' window for the 'student' table, including details for the 'id' column as an identity column.

Column Name	Data Type	Allow Nulls
id	varchar(20)	<input type="checkbox"/>
name	varchar(20)	<input type="checkbox"/>
marks	varchar(20)	<input type="checkbox"/>

Column Properties	
(General)	
(Name)	id
Allow Nulls	No
Data Type	varchar
Default Value or Binding	
Length	20

Table Designer	
(General)	
Identity Column	
Indexable	Yes
Lock Escalation	Table
Regular Data Space PRIMARY	
Replicated	No
Row GUID Column	
Text/Image Filegr	PRIMARY

Properties	
[Tbl] dbo.student	
Identity	
(Name)	student
Database Name	Exam
Description	
Schema	dbo
Server Name	admin-pc

CHAPTER-8

INPUT/OUTPUT SCREEN

HOME PAGE:-



This home page contains all the modules which are in our project. After the home page we will go to our registration page for register

REGISTRATION:-

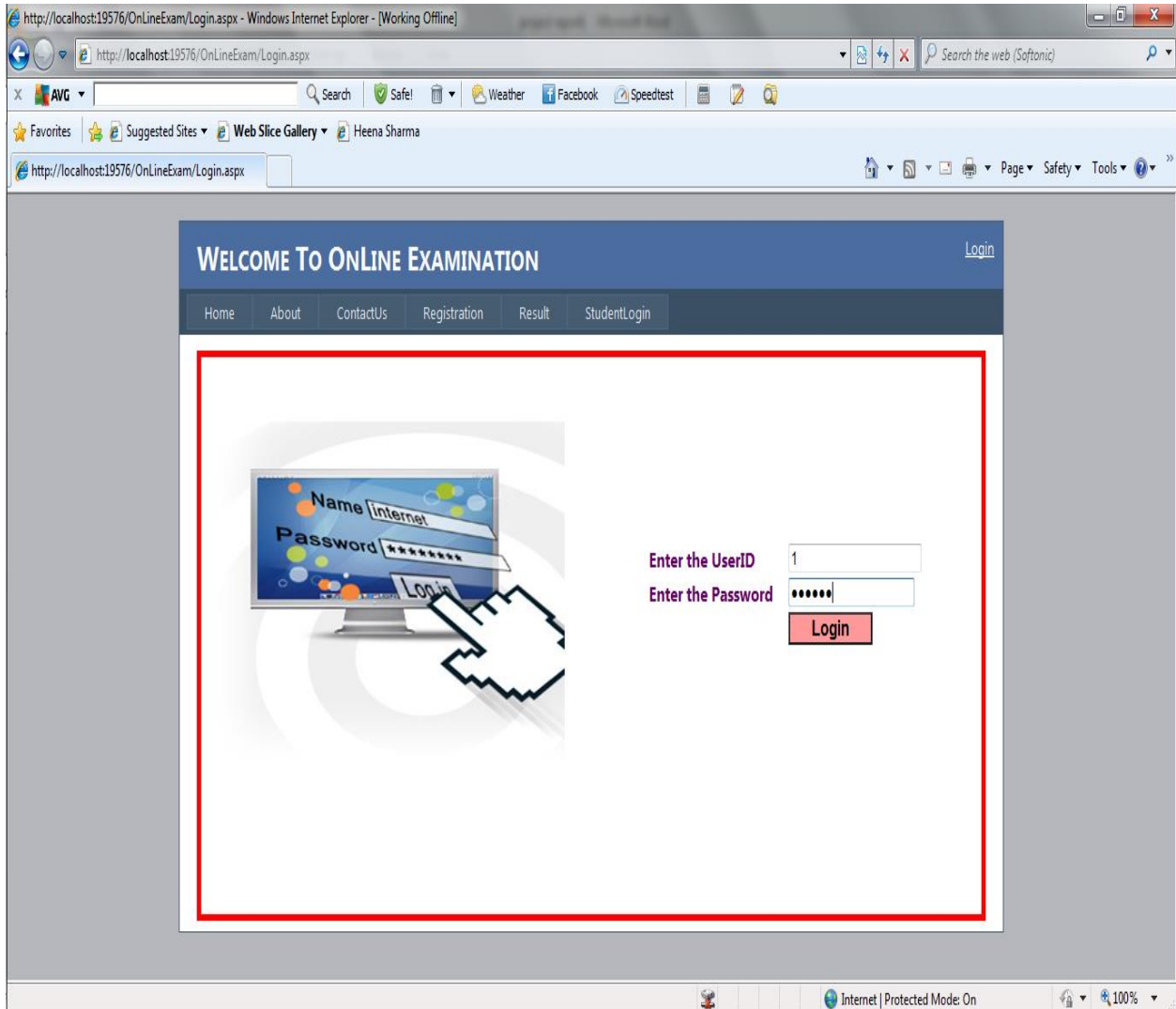
The screenshot shows a web browser window displaying a registration page. The page title is "WELCOME TO ONLINE EXAMINATION" and the URL is "http://localhost:19576/OnLineExam/Registration.aspx". The page features a navigation menu with links for Home, About, ContactUs, Registration, Result, and StudentLogin. The main content area is titled "Registration Form" and contains five input fields, each with a "Submit" button:

- Enter the Name:** Input field contains "Bharti".
- Enter the Password:** Input field contains "*****".
- Enter the Father's Name:** Input field contains "Satyapal Singh".
- Enter the MobileNo:** Input field contains "9310876816".
- Enter the Email-ID:** Input field contains "artikasana20@gmail.com".

The "Submit" button for the Email-ID field is highlighted in red. The page also includes a "Login" link in the top right corner and a "Protected Mode: On" indicator in the bottom right corner.

In this registration page the students fill all the information about themselves. After the registration the student will get a unique ID.

LOGIN FORM For Student:-

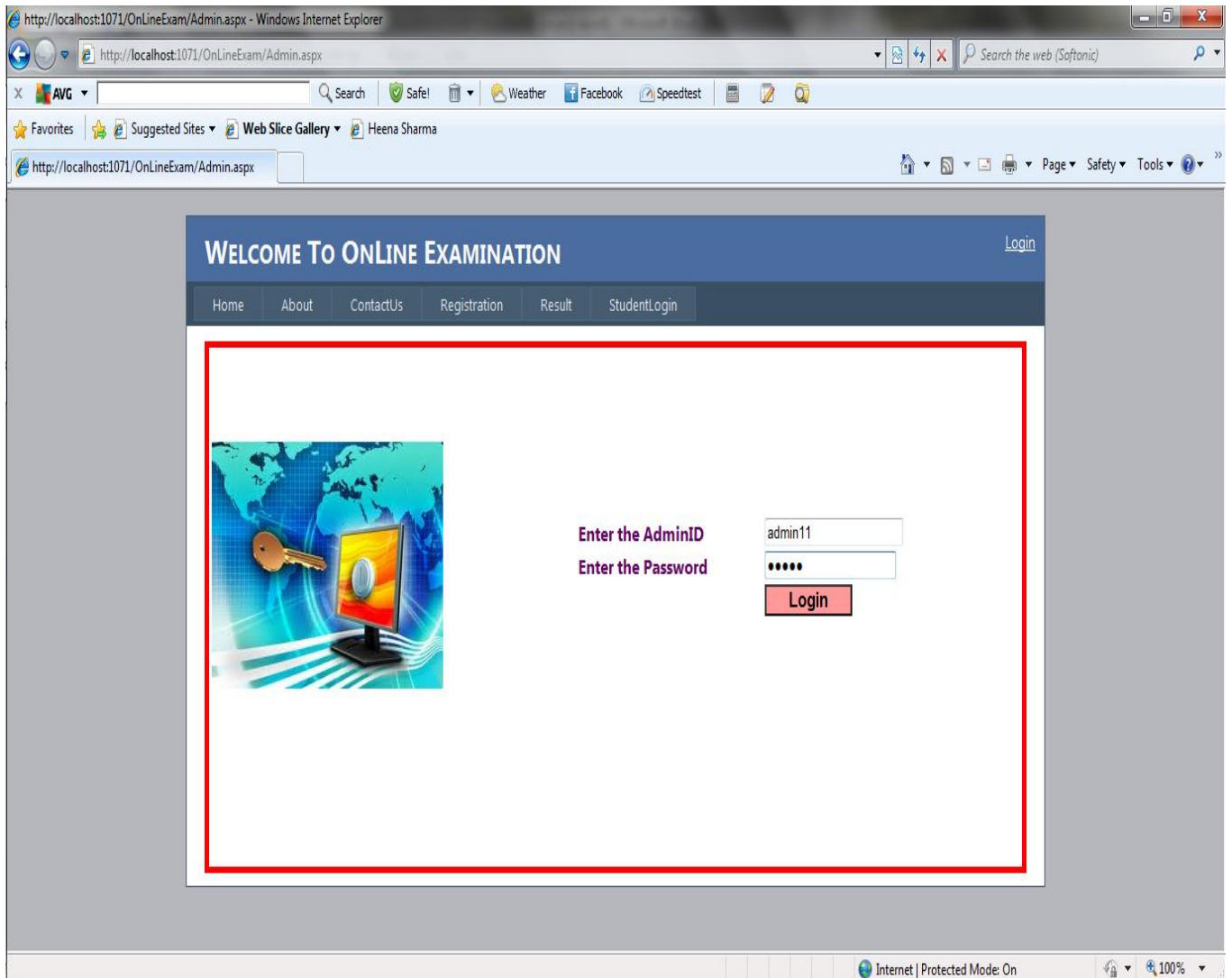


The screenshot shows a web browser window with the URL `http://localhost:19576/OnLineExam/Login.aspx`. The page title is "WELCOME TO ONLINE EXAMINATION". The navigation menu includes "Home", "About", "ContactUs", "Registration", "Result", and "StudentLogin". The main content area features a login form with the following elements:

- A blue header bar with the text "WELCOME TO ONLINE EXAMINATION" and a "Login" link.
- A navigation menu with "Home", "About", "ContactUs", "Registration", "Result", and "StudentLogin".
- A central graphic of a computer monitor displaying "Name internet" and "Password *****" with a hand cursor pointing to a "Login" button.
- A login form with two input fields: "Enter the UserID" (containing "1") and "Enter the Password" (containing "*****").
- A red "Login" button.

Through this Login Page a student is authenticate to give the test in an efficient manner. In this page only the student who had done registration can give the exam.

LOGIN FORM for ADMIN :-



In this admin page the administrator is authenticate and only the person can control the exam.

EXAM FORM:-

The screenshot shows a web browser window with the URL `http://localhost:19576/OnLineExam/Ques.aspx`. The page has a blue header with the text "WELCOME TO ONLINE EXAMINATION" and a "Login" link. Below the header is a navigation menu with links for "Home", "About", "ContactUs", "Registration", "Result", and "StudentLogin". The main content area contains a form with the following elements:

- A text input field with the number "1" above it.
- A table with four columns and two rows. The first row contains a "Populate Question" button and a "Next" button.
- A section titled "Full Form of oop" with four radio button options: "object oriented project", "object oriented programming" (which is selected), "oriented object programming", and "program object oriented".
- A "Save" button located below the radio button options.

The browser's status bar at the bottom indicates "Internet | Protected Mode: On" and a zoom level of "100%".

There generate the question for the student which is interest to give the exam. In this page the student can give the exam where the only one choice is right and the test has a limited time.

RESULT FORM:-

The screenshot shows a web browser window displaying an online examination result page. The browser's address bar shows the URL `http://localhost:19576/OnLineExam/Result.aspx`. The page has a dark blue header with the text "WELCOME TO ONLINE EXAMINATION" and a "Login" link. Below the header is a navigation menu with links for "Home", "About", "ContactUs", "Registration", "Result", and "StudentLogin". The main content area features a white box with a red border containing the following elements:

- A red heading: "WelCome To Result Form"
- A text prompt: "Enter The ID For Search The Result" followed by an input field containing the number "1".
- A table with the following data:

ID	Name	Marks
1	bharti	3

Below the table is a red button labeled "Result".

The browser's status bar at the bottom shows "Done" and "Internet | Protected Mode: On".

Through this page the user can get their result.

CONCLUSION AND FUTURE WORK

The On line test System is developed using JAVA and SQL fully meets the objectives of the system for which it has been developed. The system has reached a steady state where all bugs have been eliminated. The system is operated at a high level of efficiency and all the teachers and users associated with the system understand its advantage. The system solves the problem. It was intended to solve a requirement specification.

Scope of this project is very broad in terms of other manually taking exams.

Few of them are:-

- This can be used in educational institutions as well as in corporate world.
- Can be used anywhere any time as it is a web based application (user location doesn't matter).
- No restriction that examiner has to be present when the candidate takes the test.

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