

## 1. INTRODUCTION

This project *Online Recruitment System* is an online website in which jobseekers can register themselves online and apply for job and attend the exam. Online Recruitment System provides online help to the users all over the world. Using web recruitment systems like recruitment websites or jobsites also play a role in simplifying the recruitment process. Such websites have facilities where prospective candidates can upload their CV's and apply for jobs suited to them. Such sites also make it possible for recruiters and companies to post their staffing requirements and view profiles of interested candidates. Earlier recruitment was done manually and it was all at a time consuming work. Now it is all possible in a fraction of second. It is all done online without much time consuming. Today's recruitment applications are designed to do a whole lot more than just reduce paperwork. They can make a significant contribution to a company's marketing and sales activity. Recruitment websites and software make possible for managers to access information that is crucial to managing their staff, which they can use for promotion decisions, payroll considerations and succession planning.

Online Recruitment System enables the users to have the typical examination facilities and features at their disposal. It resolves typical issues of manual examination processes and activities into a controlled and closely monitored work flow in the architecture of the application. This multi platform solution brings in by default, the basic intelligence and immense possibilities for further extension of the application as required by the user. The system makes it friendly to distribute, share and manage the examination entities with higher efficiency and easiness. The objective of these websites is to serve as a common meeting ground for jobseekers and employers, both locally and globally, where the candidates find their dream jobs and recruiters find the right candidate to fulfill their needs. These sites are specifically designed for those who seek the most demanding and challenging positions in their chosen field, with the most dynamic employers. Thousands of websites compete for your attention-each has its own unique interface, URL and peculiarities.

A quick look at the overall trends in Online recruiting shows the rise in the importance of marketing the web site, online training, dawn of video interviews and emergence of professional Internet Recruiters. Online recruiting and online recruiting systems, with its emphasis on a more strategic decision making process is fast gaining ground as a popular outsourced function.

## 2. ABSTRACT

This project is aimed at developing a web-based and central recruitment Process system for the HR Group for a company. Some features of this system will be creating vacancies, storing application data, and Interview process initiation, Scheduling interviews, storing Interview results for the applicant and finally Hiring of the applicant. Reports may be required to be generated for the use of the HR group.

This project '*Online Recruitment System*' is an online website in which jobseekers can register themselves and then attend the exam. Based on the outcome of the exam the jobseekers will be short listed. For fresher, the exam will be conducted at some venue after short listing of the preliminary Aptitude Test. The details of the examination, venue & Date of the examination will be made available to them through the website.

Module in this project:

1. Administrator
2. Jobseekers
3. Company

Brief description on the modules:

1. Administrator: Administrator has the full authority over the website. He can view all the registered users and have the power to delete them. He can edit the web pages and update them. He can view all the company details also.

2. Jobseeker: A jobseeker can register himself. After registration, he will be directed to his homepage. Here he can update his profile, change password and see the examination details and all.

3. Company: A company can register itself, conduct online examination, approve or disapprove candidates attending examination and provides results about the selected candidates.

### **3. SYSTEM ANALYSIS**

#### **3.1 DEFINITION**

System Analysis is the detailed study of the various operations performed by the system and their relationships within and outside the system. Analysis is the process of breaking something into its parts so that the whole may be understood. System analysis is concerned with becoming aware of the problem, identifying the relevant and most decisional variables, analyzing and synthesizing the various factors and determining an optional or at least a satisfactory solution. During this a problem is identified, alternate system solutions are studied and recommendations are made about committing the resources used to the system.

#### **3.2 DESCRIPTION OF PRESENT SYSTEM**

Presently recruitment is done manually. That is if a company or organization needs employees they make an announcement through newspaper. People who are eligible send application to the organization or company. From these applications they are called for interviews or tests. After tests company has to do short listing manually. From these shortlisted candidates, they are called for interviews. After interview short listed candidates are employed. So it's all a time consuming procedure.

#### **LIMITATIONS OF PRESENT SYSTEM**

Recruitment is done manually. These tasks are time consuming. It may take one month or long. People around the world cannot apply. Online Recruitment system very convenient because in the manual system there are lot of difficulties in conducting and managing a recruitment exam, short listing, maintaining staff etc.

#### **3.3 PROPOSED SYSTEM**

Online Recruitment is aimed at developing a web-based and central recruitment Process system for the HR Group for a company. Some features of this system will be creating vacancies, storing application data, and Interview process initiation, Scheduling Interviews, Storing Interview results for the applicant and finally hiring of the applicant. This project *Online Recruitment System* is an online website in which jobseekers can register themselves and then attend the exam. Based on the outcome of the exam the jobseekers will be shortlisted. The details of the examination & Date of the examination will be made available to them through the website. People all around the world can apply and register. It has made all the process easy.

## **ADVANTAGES**

Online Recruitment System enables the users to have the typical examination facilities and features at their disposal. It resolves typical issues of manual examination processes and activities into a controlled and closely monitored work flow in the architecture of the application. This multi platform solution brings in by default, the basic intelligence and immense possibilities for further extension of the application as required by the user. The system makes it friendly to distribute, share and manage the examination entities with higher efficiency and easiness. It is a comprehensive resource for finding a job online.

### **3.4 FEASIBILITY STUDY**

A feasibility analysis usually involves a through assessment of the operational (need), financial and technical aspects of a proposal. Feasibility study is the test of the system proposal made to identify whether the user needs may be satisfied using the current software and hardware technologies, whether the system will be cost effective from a business point of view and whether it can be developed with the given budgetary constraints. A feasibility study should be relatively cheap and done at the earliest possible time. Depending on the study, the decision is made whether to go head with a more detailed analysis.

When a new project is proposed, it normally goes through feasibility assessment. Feasibility study is carried out to determine whether the proposed system is possible to develop with available resources and what should be the cost consideration. Facts considered in the feasibility analysis were

- Technical Feasibility
- Economic Feasibility
- Behavioral Feasibility

#### **Technical Feasibility**

Technical feasibility includes whether the technology is available in the market for development and its availability. The assessment of technical feasibility must be based on an outline design of system requirements in terms of input, output, files, programs and procedures. This can be qualified in terms of volumes of data, trends, frequency of updating, cycles of activity etc, in order to give an introduction of technical system. Considering our project it is technical feasible. Online Recruiting and Online Recruitment Systems, with its emphasis on a more strategic decision making process is fast gaining ground as a popular outsourced function.

### **Economic Feasibility**

This feasibility study present tangible and intangible benefits from the project by comparing the development and operational cost. The technique of cost benefit analysis is often used as a basis for assessing economic feasibility. This system needs some more initial investment than the existing system, but it can be justifiable that it will improve quality of service.

Thus feasibility study should center along the following points:

- Improvement resulting over the existing method in terms of accuracy, timeliness.
- Cost comparison
- Estimate on the life expectancy of the hardware.
- Overall objective.

Our project is economically feasible. It does not require much cost to be involved in the overall process. The overall objective is in easing out the recruitment processes.

### **Behavioral / Operational Feasibility**

This analysis involves how it will work when it is installed and the assessment of political and managerial environment in which it is implemented. People are inherently resistant to change and computers have been known to facilitate change. The new proposed system is very much useful to the users and therefore it will accept broad audience from around the world.

## **4. SYSTEM DESIGN**

### **4.1 DEFINITION**

The most creative and challenging face of the system development is System Design. It provides the understanding and procedural details necessary for the logical and physical stages of development. In designing a new system, the system analyst must have a clear understanding of the objectives, which the design is aiming to fulfill. The first step is to determine how the output is to be produced and in what format. Second, input data and master files have to be designed to meet the requirements of the proposed output. The operational phases are handled through program construction and testing.

Design of the system can be defined as a process of applying various techniques and principles for the purpose of defining a device, a process or a system in sufficient detail to permit its physical realization. Thus system design is a solution to “how to” approach to the creation of a new system. This important phase provides the understanding and the procedural details necessary for implementing the system recommended in the feasibility study. The design step provides a data design, architectural design, and a procedural design.

### **4.2 OUTPUT DESIGN**

In the output design, the emphasis is on producing a hard copy of the information requested or displaying the output on the CRT screen in a predetermined format. Two of the most output media today are printers and the screen. Most users now access their reports from either a hard copy or screen display. Computer’s output is the most important and direct source of information to the user, efficient, logical, output design should improve the systems relations with the user and help in decision-making.

As the outputs are the most important source of information to the user, better design should improve the systems relations and also should help in decision-making. The output device’s capability, print quality, response time requirements etc should also be considered, form design elaborates the way the output is presented and layout available for capturing information. It’s very helpful to produce the clear, accurate and speedy information for end users.

### **4.3 INPUT DESIGN**

In the input design, user-originated inputs are converted into a computer-based system format. It also includes determining the record media, method of input, speed of capture and entry on to the screen. Online data entry accepts commands and data through a keyboard. The major approach to input design is the menu and the prompt design. In each alternative, the user’s options are predefined. The data flow diagram indicates logical data flow, data stores, source and destination. Input data are collected and organized into a group of similar data once identified input media are selected for processing.

In this software, importance is given to develop Graphical User Interface (GUI), which is an important factor in developing efficient and user friendly software. For inputting user data, attractive forms are designed. User can also select the desired options from the menu, which provides all possible facilities. Also the important input format is designed in such a way that accidental errors are avoided. The user has to input only just the minimum data required, which also helps in avoiding the errors that the users may make. Accurate designing of the input format is very important in developing efficient software. The goal of input design is to make entry as easy, logical and free from errors.

#### **4.4 LOGICAL DESIGN**

Logical data design is about the logically implied data. Each and every data in the form can be designed in such a manner to understand the meaning. Logical data designing should give a clear understanding & idea about the related data used to construct a form.

##### **Data flow diagram**

A Data Flow Diagram (DFD) is a diagram that describes the flow of data and the processes that change or transform data throughout a system. It's a structured analysis and design tool that can be used for flowcharting in place of, or in association with, information oriented and process oriented system flowcharts. When analysts prepare the Data Flow Diagram, they specify the user needs at a level of detail that virtually determines the information flow into and out of the system and the required data resources. This network is constructed by using a set of symbols that do not imply a physical implementation. The Data Flow Diagram reviews the current physical system, prepares input and output specification, specifies the implementation plan etc.

Four basic symbols are used to construct data flow diagrams. They are symbols that represent data source, data flows, and data transformations and data storage. The points at which data are transformed are represented by enclosed figures, usually circles, which are called nodes.

## **5. OVERVIEW OF LANGUAGE USED**

### **About J2EE & Microsoft Access**

#### **JAVA**

Java is a small, simple, safe, object oriented, interpreted or dynamically optimized, byte coded, architectural, garbage collected, multithreaded programming language with a strongly typed exception-handling for writing distributed and dynamically extensible programs.

Java is an object oriented programming language. Java is a high-level, third generation language like C, FORTRAN, Small talk, Pearl and many others. You can use java to write computer

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applications that crunch numbers, process words, play games, store data or do any of the thousands of other things computer software can do.

Special programs called applets that can be downloaded from the internet and played safely within a web browser. Java supports this application and the following features make it one of the best programming languages.

- It is simple and object oriented
- It helps to create user friendly interfaces.
- It is very dynamic.
- It supports multithreading.
- It is platform independent
- It is highly secure and robust.
- It supports internet programming

**Java** is a programming language originally developed by Sun Microsystems and released in 1995 as a core component of Sun's Java platform. The language derives much of its syntax from C and C++ but has a simpler object model and fewer low-level facilities. Java applications are typically compiled to byte code which can run on any Java virtual machine (JVM) regardless of computer architecture.

The original and reference implementation Java compilers, virtual machines, and class libraries were developed by Sun from 1995. As of May 2007, in compliance with the specifications of the Java Community Process, Sun made available most of their Java technologies as free software under the GNU General Public License. Others have also developed alternative implementations of these Sun technologies, such as the GNU Compiler for Java and GNU Classpath.

The Java language was created by James Gosling in June 1991 for use in a set top box project. The language was initially called *Oak*, after an oak tree that stood outside Gosling's office - and also went by the name *Green* - and ended up later being renamed to *Java*, from a list of random words. Gosling's goals were to implement a virtual machine and a language that had a familiar C/C++ style of notation.

### **Primary goals**

There were five primary goals in the creation of the Java language:

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1. It should use the object-oriented programming methodology.
2. It should allow the same program to be executed on multiple operating systems.
3. It should contain built-in support for using computer networks.
4. It should be designed to execute code from remote sources securely.
5. It should be easy to use by selecting what were considered the good parts of other object-oriented languages.

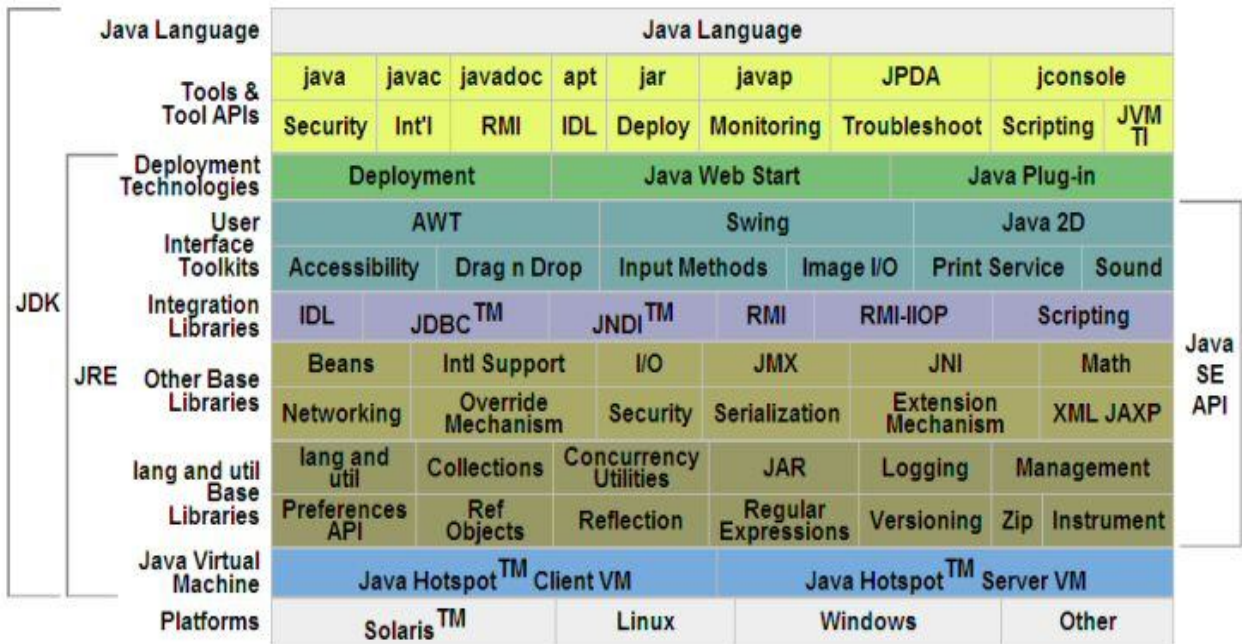
The *Java platform* is the name for a bundle of related programs, or platform, from Sun which allow for developing and running programs written in the Java programming language. The platform is not specific to any one processor or operating system, but rather an execution engine (called a virtual machine) and a compiler with a set of standard libraries which are implemented for various hardware and operating systems so that Java programs can run identically on all of them.

Different "editions" of the platform are available, including:

- Java ME (Micro Edition): Specifies several different sets of libraries (known as profiles) for devices which are sufficiently limited that supplying the full set of Java libraries would take up unacceptably large amounts of storage.
- Java SE (Standard Edition): For general purpose use on desktop PCs, servers and similar devices.
- Java EE (Enterprise Edition): Java SE plus various APIs useful for multi-tier client-server enterprise applications.

The Java Platform consists of several programs, each of which provides a distinct portion of its overall capabilities. For example, the Java compiler, which converts Java source code into Java bytecode (an intermediate language for the Java Virtual Machine (JVM)), is provided as part of the Java Development Kit (JDK). The sophisticated Java Runtime Environment (JRE), complementing the JVM with a just-in-time (JIT) compiler, converts intermediate bytecode into native machine code on the fly. Also supplied are extensive libraries (pre-compiled into Java bytecode) containing reusable code, as well as numerous ways for Java applications to be deployed, including being embedded in a web page as an applet. There are several other components, some available only in certain editions.

The essential components in the platform are the Java language compiler, the libraries, and the runtime environment in which Java intermediate bytecode "executes" according to the rules laid out in the virtual machine specification.



## Java Virtual Machine

The heart of the Java Platform is the concept of a "virtual machine" that executes Java bytecode programs. This bytecode is the same no matter what hardware or operating system the program is running under. There is a JIT compiler within the *Java Virtual Machine*, or JVM. The JIT compiler translates the Java bytecode into native processor instructions at run-time and caches the native code in memory during execution.

The use of bytecode as an intermediate language permits Java programs to run on any platform that has a virtual machine available. The use of a JIT compiler means that Java applications, after a short delay during loading and once they have "warmed up" by being all or mostly JIT-compiled, tend to run about as fast as native programs. Since JRE version 1.2, Sun's JVM implementation has included a just-in-time compiler instead of an interpreter.

Although Java programs are Platform Independent, the code of the Java Virtual Machine (JVM) that execute these programs are not. Every Operating System has its own JVM.

## **Class libraries**

In most modern operating systems, a large body of reusable code is provided to simplify the programmer's job. This code is typically provided as a set of dynamically loadable libraries that applications can call at runtime. Because the Java Platform is not dependent on any specific operating system, applications cannot rely on any of the existing libraries. Instead, the Java Platform provides a comprehensive set of standard class libraries, containing much of the same reusable functions commonly found in modern operating systems.

The Java class libraries serve three purposes within the Java Platform. Like other standard code libraries, they provide the programmer a well-known set of functions to perform common tasks, such as maintaining lists of items or performing complex string parsing. In addition, the class libraries provide an abstract interface to tasks that would normally depend heavily on the hardware and operating system. Tasks such as network access and file access are often heavily dependent on the native capabilities of the platform. The Java `java.net` and `java.io` libraries implement the required native code internally, then provide a standard interface for the

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Java applications to perform those tasks. Finally, when some underlying platform does not support all of the features a Java application expects, the class libraries can either emulate those features using whatever is available, or at least provide a consistent way to check for the presence of a specific feature.

## Platform independence

One characteristic, platform independence, means that programs written in the Java language must run similarly on any supported hardware/operating-system platform. One should be able to write a program once, compile it once, and run it anywhere.

This is achieved by most Java compilers by compiling the Java language code *halfway* (to Java bytecode) – simplified machine instructions specific to the Java platform. The code is then run on a virtual machine (VM), a program written in native code on the host hardware that interprets and executes generic Java bytecode. (In some JVM versions, bytecode can also be compiled to native code, either before or during program execution, resulting in faster execution.) Further, standardized libraries are provided to allow access to features of the host machines (such as graphics, threading and networking) in unified ways. Note that, although there is an explicit compiling stage, at some point, the Java bytecode is interpreted or converted to native machine code by the JIT compiler.

The first implementations of the language used an interpreted virtual machine to achieve portability. These implementations produced programs that ran more slowly than programs compiled to native executables, for instance written in C or C++, so the language suffered a reputation for poor performance. More recent JVM implementations produce programs that run significantly faster than before, using multiple techniques.

One technique, known as *just-in-time compilation* (JIT), translates the Java bytecode into native code at the time that the program is run, which results in a program that executes faster than interpreted code but also incurs compilation overhead during execution. More sophisticated VMs use *dynamic recompilation*, in which the VM can analyze the behavior of the running program and selectively

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recompile and optimize critical parts of the program. Dynamic recompilation can achieve optimizations superior to static compilation because the dynamic compiler can base optimizations on knowledge about the runtime environment and the set of loaded classes, and can identify the *hot spots* (parts of the program, often inner loops, that take up the most execution time). JIT compilation and dynamic recompilation allow Java programs to take advantage of the speed of native code without losing portability.

Another technique, commonly known as *static compilation*, is to compile directly into native code like a more traditional compiler. Static Java compilers, such as GCJ, translate the Java language code to native object code, removing the intermediate bytecode stage. This achieves good performance compared to interpretation, but at the expense of portability; the output of these compilers can only be run on a single architecture. Some see avoiding the VM in this manner as defeating the point of developing in Java; however it can be useful to provide both a generic bytecode version, as well as an optimised native code version of an application.

## Automatic memory management

One of the ideas behind Java's automatic memory management model is that programmers be spared the burden of having to perform manual memory management. In some languages the programmer allocates memory for the creation of objects stored on the heap and the responsibility of later deallocating that memory also resides with the programmer. If the programmer forgets to deallocate memory or writes code that fails to do so, a memory leak occurs and the program can consume an arbitrarily large amount of memory. Additionally, if the program attempts to deallocate the region of

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memory more than once, the result is undefined and the program may become unstable and may crash. Finally, in non garbage collected environments, there is a certain degree of overhead and complexity of user-code to track and finalize allocations. Often developers may box themselves into certain designs to provide reasonable assurances that memory leaks will not occur.

In Java, this potential problem is avoided by automatic garbage collection. The programmer determines when objects are created, and the Java runtime is responsible for managing the object's lifecycle. The program or other objects can reference an object by holding a reference to it (which, from a low-level point of view, is its address on the heap). When no references to an object remain, the Java garbage collector automatically deletes the unreachable object, freeing memory and preventing a memory leak. Memory leaks may still occur if a programmer's code holds a reference to an object that is no longer needed—in other words, they can still occur but at higher conceptual levels.

The use of garbage collection in a language can also affect programming paradigms. If, for example, the developer assumes that the cost of memory allocation/recollection is low, they may choose to more freely construct objects instead of pre-initializing, holding and reusing them. With the small cost of potential performance penalties (inner-loop construction of large/complex objects), this facilitates thread-isolation (no need to synchronize as different threads work on different object instances) and data-hiding. The use of transient immutable value-objects minimizes side-effect programming.

Comparing Java and C++, it is possible in C++ to implement similar functionality (for example, a memory management model for specific classes can be designed in C++ to improve speed and lower memory fragmentation considerably), with the possible cost of adding comparable runtime overhead to that of Java's garbage collector, and of added development time and application complexity if one favors manual implementation over using an existing third-party library. In Java, garbage collection is built-in and virtually invisible to the developer. That is, developers may have no notion of when garbage collection will take place as it may not necessarily correlate with any actions being explicitly performed by the code they write. Depending on intended application, this can be beneficial or disadvantageous: the programmer is freed from performing low-level tasks, but at the same time loses the option of writing lower level code. Additionally, the garbage collection capability demands some attention to tuning the JVM, as large heaps will cause apparently random stalls in performance.

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Java does not support pointer arithmetic as is supported in, for example, C++. This is because the garbage collector may relocate referenced objects, invalidating such pointers. Another reason that Java forbids this is that type safety and security can no longer be guaranteed if arbitrary manipulation of pointers is allowed.

## Performance

Java's performance has improved substantially since the early versions, and performance of JIT compilers relative to native compilers has in some tests been shown to be quite similar. The performance of the compilers does not necessarily indicate the performance of the compiled code; only careful testing can reveal the true performance issues in any system.

## Java Runtime Environment

The Java Runtime Environment, or *JRE*, is the software required to run any application deployed on the Java Platform. End-users commonly use a JRE in software packages and Web browser plugins. Sun also distributes a superset of the JRE called the Java 2 SDK (more commonly known as the JDK), which includes development tools such as the Java compiler, Javadoc, Jar and debugger.

One of the unique advantages of the concept of a runtime engine is that errors (exceptions) should not 'crash' the system. Moreover, in runtime engine environments such as Java there exist tools that attach to the runtime engine and every time that an exception of interest occurs they record debugging information that existed in memory at the time the exception was thrown (stack and heap values). These Automated Exception Handling tools provide 'root-cause' information for exceptions in Java programs that run in production, testing or development environments.