



Introduction to Java And APIs

Java technology is both a high-level object-oriented programming language and a platform. Java is a programming language originally developed by Sun Microsystems that was released in 1995 as a core component of Sun Microsystems' Java platform. Java applications are typically compiled to byte code that can run on any Java virtual machine (JVM) regardless of architecture.

Nowadays, companies (big or small) use J2EE technology to run their computer network over the world. J2EE has become a successful, widely supported, and widely used platform for enterprise applications. The Java language and platform are impressively scalable. At the low end, existing applications can easily be adapted for devices with limited-memory resources. Scaling up, the language is an ideal framework for server-side Web programming. Because it was designed to run in a secure manner over networks, it affords this level of security when operating over the Internet. In essence, Java technology extends a user's computing power from the desktop to the resources of the Web.

Web components are supported by runtime platforms called Web containers, whose services include request dispatching, security, concurrency, life-cycle management, and access to APIs such as naming, transactions, and e-mail. At the high end, Java application servers serve as Web containers for Java components, XML, and Web services that can interact with databases and provide dynamic Web content; they also provide an application-deployment environment for enterprise applications, with capabilities for transaction management, security, clustering, performance, availability, connectivity, and scalability.

Sun Microsystems has defined three platforms targeting different application environments and segmented many of its APIs so that they belong to one of the platforms. The platforms are:

Java Platform, Micro Edition (Java ME)

Formerly called J2ME, targeting environments with limited resources, provides a robust, flexible environment for applications running on a broad range of mobile and embedded devices, such as mobile phones, PDAs, TV set-top boxes, and printers. The Java ME platform includes flexible user interfaces, a robust security model, a broad range of built-in

network protocols, and extensive support for networked and offline applications that can be downloaded dynamically. Applications based on Java ME specifications are written once for a wide range of devices yet exploit each device's native capabilities.

Java Platform, Standard Edition (Java SE)

Formerly called J2SE, Java SE allows you to develop and deploy Java applications on desktops and servers, as well as embedded and real-time environments. Java SE includes classes that support the development of Java Web services and provides the foundation for Java Platform, Enterprise Edition (Java EE).

Java Platform, Enterprise Edition (Java EE)

Targeting large distributed enterprise or Internet environments. The enterprise version assists in the development and deployment of portable, robust, scalable, and secures server-side Java applications. Building on the foundation of Java SE, Java EE provides Web services; the set of APIs is controlled by Sun Microsystems in cooperation with others through the Java Community Process program.

Applications in Java

Java can be used for the development of database-driven, web-based applications and mobile applications for wireless devices.

Web Applications in J2EE

Java 2 Enterprise Edition (J2EE) provides an object-oriented, distributed and cross-platform framework for developing and deploying robust, secure and scalable E-Business and E-Commerce applications. J2EE is a platform for delivering enterprise applications. It enables efficient development of enterprise applications, while leveraging investments in existing business resources such as Database Systems, Messaging Systems and Naming and Directory Services. Using J2EE, enterprise developers may implement business objects using the Enterprise JavaBeans (EJB) technology and deploy them across a wide range of J2EE compliant application servers. Enterprise developers may also build sophisticated clients for their E-Business applications using the Java Servlet, Java Server Pages (JSP), XML or the Java Applet technologies. These clients may be packaged and deployed on a Web Container. J2EE enables component-based development of both the business logic and the presentation logic. Using this approach, enables the development of thin HTML, DHTML and JavaScript based clients. J2EE also supports the development of complex clients as regular Java applications and applets.

J2EE provides support for developing distributed, multi-tier applications. Such applications are typically configured as a client tier to provide the user interface, one or more middle-tier modules that provide client services and business logic for an application, and back-end enterprise information systems providing data management.

The J2EE platform provides access to a host of enterprise services using well-defined and standard Java Enterprise APIs that are listed below.

- Enterprise JavaBeans (EJB)
- Extensible Markup Language (XML)
- Servlets
- Java Server Pages (JSP)
- Java Messaging Service (JMS)
- Java Database Connectivity (JDBC)
- JavaMail
- JavaIDL
- Java Naming and Directory Interface (JNDI)
- Java RMI/IIOP

Mobile Applications with J2ME

Java 2 Micro Edition (J2ME) is Sun Microsystems's version of Java, aimed at machines with limited hardware resources such as PDAs, cell phones, and other consumer electronic and embedded devices. J2ME has basically been designed for machines with as little as 128KB of RAM and with processors a lot less powerful than those used on typical desktop and server machines. J2ME actually consists of a set of profiles. Each profile is defined for a particular type of device -- cell phones, PDAs, microwave ovens, etc. -- and consists of a minimum set of class libraries required for the particular type of device and a specification of a Java virtual machine required to support the device. The virtual machine specified in any profile is not necessarily the same as the virtual machine used in Java 2 Standard Edition (J2SE) and Java 2 Enterprise Edition (J2EE).

J2ME Profiles

The Foundation Profile -- A profile for next generation consumer electronic devices

The Mobile Information Device Profile (MIDP) -- A profile for mobile information devices, such as cellular phones and two-way pagers, and PDAs.

A profile in itself does not do anything; it just defines the specification. Profiles are implemented with a configuration. You can think of a configuration as an implementation of a J2ME profile for a particular type of device such as a PDA.

What Miri Infotech can do

We have the capability to develop Web-based and mobile applications using the Java platform. We can develop Java applications from scratch, re-build, support and extend existing applications.

We are proficient in meeting the needs of robust web applications. Security, performance and scalability are typical requirements of the projects we have done.

Expert Technologies

We have expertise with following technologies:-

Java Technology: JDBC, Java Beans, EJBs, RMI, JSP, Java servlets, Struts, Tiles, Hibernate, XML, JMS, Java IDL, JTS, JTA, JavaMail, JNDI and JAF.

IDE: Eclipse, Netbeans, JBuilder

Servers: JBoss, Apache Tomcat, BEAWeblogic

Expertise Areas in J2ME: CLDC, MIDP, WMA

Approach to Solution

Miri has its own approach for solution to a problem which involves understanding the problem, project plan, development, testing etc.

Case study of on-Line Shopping

Problem: Online shopping is one of the fastest growing consumer trends. In today's world, customers almost assume that all company should offer Internet purchasing. In order to meet customer's demand, the organization needs to have a secure, reliable, and fast Shopping Cart system in place. Purpose is to meet and exceed all of your customer's expectations, that is, to develop a website that allows customers to order and purchase your products from anywhere in the world. This, in turn, will increase organization's business exponentially.

Requirements of Client/ Purpose

- The website design should focus on the needs of potential clients visiting the website and highlight the services required by them.
- The website design should provide easy access for the user to the review the range of services available and the various types of work that the organization performs.

- The website design should seek to establish that the organization can best fulfill client needs by providing answers to critical decision making factors on the website e.g. expertise, cost, company reputation, convenience, support, flexibility etc .
- The website design and development should convey a strong company identity online to promote the organization as a leader in their field.
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The website development and design should incorporate best practice in the design and development of the website site to ensure that the site is optimized for search engines to easily explore and classify.

Solution:

Our website developments are always customized to each client, specific requirements aimed to meet with the key website development criteria and each website development is undertaken with these specific website design objectives in mind.

Proposed solution has Product Module which includes organization's complete control over managing its products on its website. It allows them to manage and update product details on their website easily allowing staff add, edit and delete the contents of each product as required. A product module is created using a database to allow for easy management of the product information and ranges online and they provide the following key advantages and features when implemented:

- Most effective method to store and display large quantities of information
- Easy to manage and update product details where staff can add/edit content of each product as required
- New products can be introduced updated over time and as no knowledge of Web Authoring is required and design consistency is maintained
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- The database updating facility will be Web-based and on a password-protected section of the site, staff can input data via a standard Web browser. No special software is required, and changes can be made from any office and location within the organization as long as it has general Internet access.

Each product area would contain a list of products which when clicked on, would provide the following details on each product, including Product Name, Product Description, and Product Picture.

Another module was a custom Shopping cart for customer's website that would allow their customers to order and purchase your products from anywhere in the world.

Another important module to integrate in website is Payment Solution to enable businesses and organizations accept online payments securely and safely for products, services, and fees.

The cart is completely editable. Users can change quantities, remove products, or move them to the wish list. If a product is customizable, (such as an address plaque), the users can change the customizable parameters. There is a wish list that users can freely add items to the wish list at any point in the checkout process.

The split screen between the cart and the checkout process remains up until the thank-you page. Because users can interact with the cart during the checkout process, they can adjust orders, see how changing individual shipping options affects the total order price, and change all the customizable features of a product, all without leaving the checkout process.