

*Q.No.1.a what are streaming technology? Explain streaming media architecture using point to point connection and broadcasting infrastructure.*

10

**Ans: Streaming Technology.**

Streaming technology allows you to transmit audio, video and other multimedia over the Internet. Streaming media services such as Video Desk deliver audio and video without making the viewer wait tediously to download files. As your computer plays the media file, it continues to download and buffer additional content from the streaming server. Playing and downloading happen at the same time. This process is almost invisible to the viewer except for a short period of initial buffering

### **Architectures for Multimedia Data**

The ability to handle large data volumes plays a decisive role when designing systems that use multimedia contents. While the data volume is normally not decisive in database-centric web applications, it influences the architecture and the design of multimedia web applications considerably. A detailed overview of architectural issues concerning multimedia data in web applications can also be found.

Basically multimedia data i.e audio and video, can be transmitted over standard internet protocols like HTTP OR FTP, just like any other data used in web applications. This approach is used by a large number of current Web applications, because it has the major benefits that no additional components are needed on the server.

- The Real-time Streaming Protocol (RTSP), Real-time Transport Protocol (RTP) and the Real-time Transport Control Protocol (RTCP) were specifically designed to stream media over networks. RTSP runs over a variety of transport protocols, while the latter two are built on top of UDP.
- Another approach that seems to incorporate both the advantages of using a standard web protocol and the ability to be used for streaming even live content is the HTTP adaptive bitrate streaming. HTTP adaptive bitrate streaming is based on HTTP progressive download, but contrary to the previous approach, here the files are very small, so that they can be compared to the streaming of packets, much like the case of using RTSP and RTP.
- Reliable protocols, such as the Transmission Control Protocol (TCP), guarantee correct delivery of each bit in the media stream. However, they accomplish this with a system of timeouts and retries, which makes them more complex to implement. It also means that when there is data loss on the network, the media stream stalls while the protocol handlers detect the loss and retransmit the missing data. Clients can minimize this effect by buffering data for display. While delay due to buffering is acceptable in video on demand scenarios, users of interactive applications such as video conferencing will experience a loss of fidelity if the delay that buffering contributes to exceeds 200 ms.
- Unicast protocols send a separate copy of the media stream from the server to each recipient. Unicast is the norm for most Internet connections, but does not scale well when many users want to view the same program concurrently.

Q.No.1.b. *Explain functional design for web architecture.*

10

Ans:

### **Functional Design.**

The functional design will also have to weight technology aspects that have a strong impact on the Web application under development. We have to observe the commensurability of our means, but our application should be expandable, scalable, and maintainable, among other things. Particular difficulties are seen in the interplay of components. Web application like news tickers can normally do without transaction support, while online shops may have to map many products phases, from configuration over ordering to repair.

### **Integration:**

We can integrate systems on three levels, which are to be interpreted as sub-levels of the functional design:

In integration on the data levels, we make sure that the data between the representations of different application are transformed and copied. Ex. Include primitive transformation steps between the data export from one application, or the use of JDBC to link database.

In integration on the application level, the interplay occurs over APIs, which means that time & semantics are closely interleaved. However, many details depend on the middleware used for coupling; this issue will be the next section.

Integration on the process level is normally seen as the highest level, because it models business model independently of the infrastructure used.

### **Communication paradigms & middleware:**

Middleware has been mentioned above as a technology to link application. Existing approaches differ strongly in their complexities and objectives. Where we briefly described inter-process communication (IPC), remote procedure call (RPC), event Based Communication (EBC), Message oriented Middleware (MOM).

The XML based approaches mentioned in different place in this book will be summarized below in preparation for the following sections. XML as an emerging lingua franca of the internet is the basis not only for a "better Web/HTML" & the portable specification of semi-structured data, but also for new distributed application standard, particularly the Simple Object Access protocol (SOAP), the Web Services Description Language (WSDL), & Universal Description discovery & Integration (UDDI), to mention a few. SOAP handles message and calls over diff. Internet protocols. e.g. HTTP, SMTP, etc. UDDI provides a sort of database to published and search for Web services.

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### Distributed Cross-corporate Web Application:

The distribution aspects have gained increasing importance in the software –side implementation of Web applications. Just as link to remote Web pages are common today distributed software will emerge from the meshed access to remote Web application in the future. This can be interrupted as services to services communication, where the term services characterize functionality offered over a well defined interface. The use of externally developed functionalities saves development cost, & the quality of components may be better but this typically comes at the cost of losing “control” over these services. E.g. security holes in passport have dampened the initial enthusiasm, and the acceptance threshold for external services in security critical applications is very high. On the other hand, a components based approaches can help to justify the money we spend for high-quality software products due the their high degree of reusability, and established confidence in the quality competed. Building on XML and basic technology like SOAP, WSDL, and UDDI, other protocols are currently emerging, of which some are complementary and some are competing .these are protocols of the type necessary to handle business across the boundaries of company

The Web services Transactions Specifications described an extensible framework to coordinate actions in distributed applications and specific coordination types for atomic transaction and business transaction .Atomic Transactions allow you coordinate short actions based on the 2-phases –commit protocol. This approach is suitable particularly to encapsulate proprietary formats of current transactions oriented system.

The Web service Choreography Interface and the competing Web Services Conversation language offer a way to specify message participating in a service and their structures as well as the sequence in which these message should be exchanged.

In addition to BPEL4WS & WSCI/WSCL, a number of the other manufacture specifics protocols are available to described business processes in XML. Includes a more detailed comparison of the protocols mentioned here and other protocols, which are not based on the Web services protocols stack.

Based on the business approach, Web applications appear to evolve into huge systems distributed over many computers. This approach integrated not only a company’s internal applications, but also third –party applications under the catchword Supply Chain Management (SCM). Web services are expected to standardize this approach on the Web. Some research situation....

Q.No.2.a) Explain test approaches with characteristics for web application

10

Ans:

Test Approaches:

Depending on the characteristics of the Web project, it may be necessary to perform test activities from agile and conventional approaches during the course of the project. This section will not introduce one specific approach for Web application testing.

**Conventional Approaches:**

From the perspective of a conventional approach, testing activities in a project include planning, preparing, performing and reporting.

- Planning: The planning step defines the quality goals ,the general testing strategy the test plans for all level metrics and measuring methods and the test environment
- Preparing: These steps involve the selecting the testing technique and tool and specifying the test case.
- Performing: This step prepares the test infrastructure runs the test case and then documents and evaluates the results.
- Reporting: This final step summarizes the test result and produce test report.

On the one hand, conventional approaches define work results and roles as well as detailed steps to create the work results.

With an understanding of the four primary agile value statements, we can turn our attention to what an agile team looks like in practice. Taken collectively, the four value statements lead to software development processes that are highly iterative and incremental and that deliver coded and tested software at the end of each iteration. The following sections cover some of the main ways in which agile teams work, including that they:

- Work as one team
- Work in short iterations
- Deliver something each iteration
- Focus on business priorities
- Inspect and adapt

**An Agile Team Works As One** Critical to the success of a project is that all project participants view themselves as one team aimed at a common goal. There is no room for a “throw it over the

wall” mentality on an agile project. Analysts do not throw requirements over the wall to designers. Designers and architects do not throw designs over a wall to coders; coders do not throw half-tested code over a wall to testers. A successful agile team must have a we’re-all-in-this-together mindset. Although an agile team should work

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together as one whole team, there are a number of specific roles on the team. It is worth identifying and clarifying those roles that play a part in agile estimating and planning. The first role is the *product owner*. The primary duties of the product owner include making sure that all team members are pursuing a common vision for the project, establishing priorities so that the highest-valued functionality is always being worked on, and making decisions that lead to a good return on the investment in the project. In commercial software development, the product owner is often someone from the marketing or product management side of the company. When developing software for internal use, the product owner may instead be a user, the users' manager, an analyst, or the person funding the project. A second role is that of customer. The customer is the person who has made the decision to fund the project or to buy the software. On a project developing software for internal use, the customer is usually a representative from another group or division. On such projects, the product owner and customer roles are often combined.

Q.No.2.b. *What are the advantage and disadvantage of automated test?*

05

Ans:

**Test automation** is the use of software to control the execution of tests, the comparison of actual outcomes to predicted outcomes, the setting up of test preconditions, and other test control and test reporting functions. Commonly, test automation involves automating a manual process already in place that uses a formalized testing process.

Although manual tests may find many defects in a software application, it is a laborious and time consuming process. In addition, it may not be effective in finding certain classes of defects. Test automation is a process of writing a computer program to do testing that would otherwise need to be done manually. Once tests have been automated, they can be run quickly. This is often the most cost effective method for software products that have a long maintenance life, because even minor patches over the lifetime of the application can cause features to break which were working at an earlier point in time.

There are two general approaches to test automation:

- **Code-driven testing.** The public (usually) interfaces to classes, modules, or libraries are tested with a variety of input arguments to validate that the results that are returned are correct.
- **Graphical user interface testing.** A testing framework generates user interface events such as keystrokes and mouse clicks, and observes the changes that result in the user interface, to validate that the observable behavior of the program is correct.

Test automation tools can be expensive, and it is usually employed in combination with manual testing. It can be made cost-effective in the longer term, especially when used repeatedly in regression testing.

Q.NO . 2 c *Explain objective of load, stress and continues testing*

05

Ans:

Stress testing is a form of testing that is used to determine the stability of a given tem or It involves testing beyond normal operational capacity, often to a breaking point, in o observe the results. Stress testing may have a more specific meaning in certain industrie as fatigue testing for materials.

In software testing, a system stress test refers to tests that put a greater emphasis on robustness, availability, and error handling under a heavy load, rather than on what would be considered correct behavior under normal circumstances. In particular, the goals of such tests may be to ensure the software does not crash in conditions of insufficient computational resources (such as memory or disk space), unusually high concurrency, or denial of service attacks.

Load testing is the process of putting demand on a system or device and measuring its response. Load testing is performed to determine a system's behavior under both normal and anticipated peak load conditions. It helps to identify the maximum operating capacity of an application as well as any bottlenecks and determine which element is causing degradation. When the load placed on the system is raised beyond normal usage patterns, in order to test the system's response at unusually high or peak loads, it is known as stress testing. The load is usually so great that error conditions are the expected result, although no clear boundary exists when an activity ceases to be a load test and becomes a stress test.

Continuous testing uses excess cycles on a developer's workstation to continuously run regression tests in the background, providing rapid feedback about test failures as source code is edited. It reduces the time and energy required to keep code well-tested, and prevents regression errors from persisting uncaught for long periods of time.

Q.No.3.a. *Explain interaction design by considering user interaction aspect for web application* 06

Ans:

The following principles are fundamental to the design and implementation of effective interfaces ,whether for traditional **GUI** environments or the web.Interaction design relate to the interaction of following:

Visual, Dynamic, Functional, Technical elements of web applications.

- Basically the significant purpose is to combine these elements and smooth conflicts between them, in order to offer the users an interesting and attractive as well as consistent and easy-to-understand experience.This section put forward for consideration to a systematic approach that divides the interaction of web application into 4 aspects:

1. User interaction User interface organization

2. Navigation User activities.

**User interaction:**

- A large number of so-called “Web-enbling” features in legacy system or application have a common development approach:
- The interaction design is reduced to presentation design.
- The web application became well defined and simplified; an increasing number of roles were coupled into **html**.
- Implementation alternative for web application user interfaces some standard by which we can take help to organize the development decisions to be made by returning to the core properties of a software application:
  1. Maintainability
  2. Reusability
  3. Scalability
  4. Sustainability
  5. Expandability

**Maintainability:**

**Maintainability defines to the average force extends I a process to locate and fix a software failure**, and is usually measured by the simplicity, conciseness modularity and self-descriptiveness.

- Web applications highly interactive user interfaces are usually based on ActiveX/Applets or Asynchronous JavaScript and XML(AJAX)technologies.

These user interfaces usually have presentation, data and logic tightly coupled, resulting in difficulties in development and maintenance.

On the other side, there are alternatives such as DHTML and Portlets that, due to a stricter separation of concerns,allow a higher modularity and maintainability.

**Reusability:**

In general computer science and software engineering, reusability is the likelihood a segment of source code that can be used again to add new functionalities with slight or no modification. Reusable modules and classes reduce implementation time, increase the likelihood that prior testing and use has eliminated bugs and localizes code modifications when a change in implementation is required.

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Reusability defines possibility of factoring out code of a particular application for use in other applications without many changes. Development technologies provide different reuse mechanisms such as code/scripting libraries. As the first web pages need to be quickly generated, the need to look for reusability at user interface level is often neglected.

### Scalability:

In general “scalability” is the ability of a computer application or product to continue to function well as it (or its context) is changed in size or volume. In terms of web development scalability define not only to the capability of bearing larger amounts of users but also, from a development point of view, to the ability of showing good judgement on different development activities that can be carried out in parallel by a development team.

Q.No 3. b) *Define web application and web engineering.*

04

Ans:

A web application is an application that is accessed over a network such as the Internet or an intranet. The term may also mean a computer software application that is hosted in a browser-controlled environment

Web Engineering.

- 1) Web Engineering is the application of systematic and quantifiable approaches (concepts, methods, techniques, tools) to cost-effective requirements analysis, design, Implementation, testing, operation, and maintenance of high-quality Web applications.
- 2) Web Engineering is also the scientific discipline concerned with the study of these approaches.

Q.No 3. c) *Explain different categories of web application by giving suitable example.*

10

Ans:

1) Document centric Web Application:-

Web pages are stored on a Web server as ready-made, i.e. Static, HTML, documents and sent to the Web client in response to a request. These Web pages are usually updated manually using respective tools. The main benefits are the simplicity and stability of such Web sites and the short response time, as the pages are already stored on the Web server. Static homepage, webcasts, and simple web presences for small businesses belong in this category.

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### 2)Interactive Web Application:-

Interactive Web applications emerged, offering a first, simple, form of interactivity by means of forms, radio buttons and selection menus. Web pages and links to other pages are generated dynamically according to user input. e.g. virtual exhibitions, news sites, or timetable information.

### 3)Transactional Web Application:-

They are created to provide more interactivity, giving the user the possibility of not only interacting with the application in a read-only manner, but also by performing updates on the underlying content. Considering a tourism information system this would allow, for example, to update the content in a decentralized way or make it possible to book rooms. e.g. Online banking, online shopping, and booking systems.

### 4)Workflow-based Web Application:-

Workflow-based applications allow the handling of workflow within or between different companies, public authorities, and private users. A driving force for this is the availability of appropriate Web services to guarantee interoperability. e.g. Business-to-Business solution (B2B) in e-commerce, e-government applications in the area of public administration, or Web-based support of patient workflows in the health section.

### 5)Collaborative Web Application:-

collaborative Web applications are employed especially for cooperation purposes in unstructured operation. there need for communication between the cooperating users is particularly high. Collaborative Web applications support shared information and workspaces. (e.g. WikiWiki and BSCW) in order to generate, edit and manage shared information.

### 6)Portal oriented Web Application:-

Portal-oriented Web applications provide a single point of access to separate, potentially heterogeneous sources of information and services. Makers of browsers, such as Microsoft and Netscape, search engine such as Yahoo, online services such as AOL, media conglomerates, and other companies have become aware of demand for this and now offer central hubs so called portals, as point of access to the Web. e.g. Community portal, online shopping mall, business portal

### 7)Social Web Application:-

While originally the Web was characterized by anonymity, there is an increasing trend towards a social web, where people provide their identity to a community of others with similar interest. Weblogs or collaborative filtering systems for instance, which serve the purpose of not only finding related objects of interest but also finding people with similar interests, belong to that category of applications.

8) Ubiquitous Web Application:-

The increasingly important category of ubiquitous Web Application provides customized services anytime anywhere and for any device, thus facilitating ubiquitous access. An example of this would be displaying the menu of the day on the mobile devices of all users entering a restaurant between 11 am and 2 pm. For this type of system it is important to take into account the limitations of mobile devices and the context in which the Web Application is currently being used.

e.g. Customized services, location-aware services, multi-platform delivery.

9) Semantic Web Application:-

The goal of the Semantic Web is to present information on the web not merely for humans, but also in a machine readable form. This would facilitate knowledge, as well as locating new relevant knowledge, e.g. by means of recommender systems. Through increased inter operation on the semantic level and the possibility of automating tasks, we believe the web will become even more ubiquitous and therefore relevant for everyday life.

Q.No. 4.a). Explain in detail content modeling and access modeling with diagram.

10

Ans:

**Content Modeling:**

- The information provided by a Web application is one of the most important factors for the success of that application, not least due to the origins of the Web as an information medium.
- Modeling the content in the sense of pure data modeling is normally sufficient for static Web application. Complex Web applications additionally require the modeling of behavioral aspects.
- This means that content modeling includes the creation of the problem domain model, consisting of static and dynamic aspects, as known from traditional Software Engineering. In addition the Web application characteristics have to be taken into account:
  - **Document-centric character and multimedia :**
    - It is necessary to take all kinds of different media formats into account when modeling the content, including the structures the information is based on.
  - **Integration of existing data and software :**

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- Many web application build on existing data repositories and software components. Content modeling has to satisfy two potentially contradicting objectives, i.e., it should cover the content requirements of the Web application to the best possible extent, and it should include existing data structures and software components.

### Objectives:

- Content modeling is aimed at transferring the information and functional requirements determined by requirements engineering to a model.
- Content modeling produces a model that comprises both the structural aspects of the content and depending on the type of Web application, the behavioral aspects, e.g., in the form of state and interaction diagrams.

### Concepts:

- As mentioned earlier, content modeling builds on the concepts and methods of data modeling or object-oriented modeling.
- It strives to ensure that existing information is free from redundancies and reusable. Fig. (1) shows a very simplified UML class diagram for the reviewing system example.
- The diagram models a conference to be held on a number of topics, and users who can sign in to the conference and submit their papers.
- This class diagram will later serve as the basis to model the hypertext and presentation for the example application.
- In addition to class diagram, Fig. (2) shows a state machine diagram used to model the various states of a paper in the reviewing system. It shows that a submitted paper will be assigned to three reviewers for review after the submission deadline has expired.
- If the pre-set threshold value is reached, the paper is accepted; otherwise, it is rejected. Finally, an accepted paper will be printed once the final version has been submitted.

Q.No. 4.b)

*Explain XML DOM and XML schemas with example.*

10

Ans:

The XML DOM is:

- A standard object model for XML
- A standard programming interface for XML
- Platform- and language-independent

- A W3C standard

The XML DOM defines the **objects and properties** of all XML elements, and the **methods** (interface) to access them.

In other words: **The XML DOM is a standard for how to get, change, add, or delete XML elements.**

### DOM Nodes

According to the DOM, everything in an XML document is a **node**.

The DOM says:

- The entire document is a document node
- Every XML element is an element node
- The text in the XML elements are text nodes
- Every attribute is an attribute node
- Comments are comment nodes

### DOM Example

Look at the following XML file (books.xml):

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<bookstore>
  <book category="cooking">
    <title lang="en">Everyday Italian</title>
    <author>Giada De Laurentiis</author>
    <year>2005</year>
    <price>30.00</price>
  </book>
  <book category="children">
    <title lang="en">Harry Potter</title>
    <author>J K. Rowling</author>
    <year>2005</year>
    <price>29.99</price>
  </book>
```

### XML Schema

published as a W3C recommendation in May 2001, is one of several XML schema languages. It was the first separate schema language for XML to achieve Recommendation status by the W3C. Because of confusion between XML Schema as a specific W3C specification, and the use of the same term to describe schema languages in general, some parts of the user community referred to this language as **WXS**, an initialism for W3C XML Schema, while others referred to it as **XSD**, an initialism for XML Schema Document—a document *written in* the XML Schema language, typically containing the "xsd" XML namespace prefix and stored with the ".xsd" filename extension. In the draft of the next version, 1.1, the W3C has chosen to adopt XSD as the preferred name, and that is the name used in this article.

Example:

```
<?xml version="1.0" encoding="utf-8"?>
```

```

<xs:schemaelementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
<xs:element name="Address">
<xs:complexType>
<xs:sequence>
<xs:element name="Recipient" type="xs:string" />
<xs:element name="House" type="xs:string" />
<xs:element name="Street" type="xs:string" />
<xs:element name="Town" type="xs:string" />
<xs:element name="County" type="xs:string" minOccurs="0" />
<xs:element name="PostCode" type="xs:string" />
<xs:element name="Country">
<xs:simpleType>
<xs:restriction base="xs:string">
<xs:enumeration value="FR" />
<xs:enumeration value="DE" />
<xs:enumeration value="ES" />
<xs:enumeration value="UK" />
<xs:enumeration value="US" />
</xs:restriction>
</xs:simpleType>
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>
</xs:schema>

```

Q.No. 5.a.

**Explain client side technologies.**

10

Ans:

**Client-side Technology.**

**Client-side** refers to operations that are performed by the client in a client-server relationship in a computer network.

Typically, a client is a computer application, such as a web browser, that runs on a user's local computer or workstation and connects to a server as necessary. Operations may be performed client-side because they require access to information or functionality that is available on the client but not on the server, because the user needs to observe them or provide input, or because the server lacks the processing power to perform the operations in a timely manner for all of the clients it serves. Additionally, if operations can be performed by the client, without sending data over the network, they may take less time, use less bandwidth, and incur a lesser security risk.

**1.Helpers & Plug-ins.**

A helper application is a separate application program that is invoked by the browser. It is simply a program that can understand and interpret files which the browser cannot handle by itself. Almost any program can be configured to act as a helper application for the browser. Examples of helper applications include Telnet and Excel.

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Helper applications cannot display the contents of a file in the context of a Web page. If the file being read is a graphic, the helper application displays only the image, not the image embedded in the Web page. Another difference is that the browser has no control over the behavior of the helper application. The browser only has the ability to start the helper application and display the appropriate file.

A plug-in is an application program invoked by the browser. It is a dynamic code module designed to extend the capabilities of the browser by integrating a third party application program into the browser. Thus, a plug-in is part of the browser binary tree and runs inside the browser window. It cannot live on its own.

### 2. Java Applets

A **Java applet** is an applet delivered to the users in the form of Java bytecode. Java applets can run in a Web browser using a Java Virtual Machine (JVM), or in Sun's AppletViewer, a stand-alone tool for testing applets. Java applets were introduced in the first version of the Java language in 1995. Java applets are usually written in the Java programming language but they can also be written in other languages that compile to Java bytecode such as Jython.

### 3. ActiveX Control.

**ActiveX** is a framework for defining reusable software components in a programming language independent way. Software applications can then be composed from one or more of these components in order to provide their functionality.

It was introduced in 1996 by Microsoft as a development of its Component Object Model (COM) and Object Linking and Embedding (OLE) technologies and is commonly used in its Windows operating system, although the technology itself is not tied to it.

Many Microsoft Windows applications — including many of those from Microsoft itself, such as Internet Explorer, Microsoft Office, Microsoft Visual Studio, and Windows Media Player — use ActiveX controls to build their feature-set and also encapsulate their own functionality as ActiveX controls which can then be embedded into other applications. Internet Explorer also allows embedding ActiveX controls onto web pages.

Q.No. 5.b.

Ans:

**Explain following web services in detail's)SOAP ii)WSDL iii)UDDI**

10

SOAP, originally defined as Simple Object Access Protocol, is a protocol specification for exchanging structured information in the implementation of Web Services in computer networks. It relies on Extensible Markup Language (XML) for its message format, and usually relies on other Application Layer protocols, most notably Remote Procedure Call (RPC) and Hypertext Transfer Protocol (HTTP), for message negotiation and transmission. SOAP can form the foundation layer of a web services protocol stack, providing a basic messaging framework upon which web services can be built. This XML based protocol consists of three parts: an envelope, which defines what is in the message and how to process it, a set of encoding rules for expressing instances of application-defined datatypes, and a convention for representing procedure calls and responses

**WSDL(Web Services Description Language)**

The WSDL defines services as collections of network endpoints, or ports. The WSDL specification provides an XML format for documents for this purpose. The abstract definitions of ports and messages are separated from their concrete use or instance, allowing the reuse of these definitions. A port is defined by associating a network address with a reusable binding, and a collection of ports defines a service. Messages are abstract descriptions of the data being exchanged, and port types are abstract collections of supported operations. The concrete protocol and data format specifications for a particular port type constitutes a reusable binding, where the operations and messages are then bound to a concrete network protocol and message format. In this way, WSDL describes the public interface to the web service.

WSDL is often used in combination with SOAP and an XML Schema to provide web services over the Internet. A client program connecting to a web service can read the WSDL file to determine what operations are available on the server. Any special datatypes used are embedded in the WSDL file in the form of XML Schema. The client can then use SOAP to actually call one of the operations listed in the WSDL file.

**UDDI(Universal Description, Discovery and Integration)**

Universal Description, Discovery and Integration (UDDI, pronounced Yu-di) is a platform-independent, Extensible Markup Language (XML)-based registry for businesses worldwide to list themselves on the Internet and a mechanism to register and locate web service applications. UDDI is an open industry initiative, sponsored by the Organization for the Advancement of Structured Information Standards (OASIS), enabling businesses to publish service listings and discover each other and define how the services or software applications interact over the Internet.

UDDI was originally proposed as a core Web service standard. It is designed to be interrogated by SOAP messages and to provide access to Web Services Description Language (WSDL) documents describing the protocol bindings and message formats required to interact with the web services listed in its directory.

Q.No. 6.a.

*Define requirement engineering. Explain requirement engineering activities for web application.*

10

Ans:

**Requirement Engineering**

RE deals with the principles, methods, and tools for eliciting, describing, validating and managing requirements. In web engineering RE has to address special challenges such as unavailable stakeholders, volatile requirements and constraints, unpredictable operational environments, inexperience with the web technologies, the particular importance of quality aspects such as usability or performance.

### **Requirement Engineering Activities.**

#### **1. Requirement elicitation & negotiation**

Requirements elicitation and analysis is the most crucial process in requirements engineering since it moulds the shape of the desired end product. In dealing with a system's stakeholders in a process to elicit the requirements, conflicts are inevitable. In the initial state, usually, all the stakeholders have a common goal; to build a system. However as an individual, they do have their own perspectives and perceptions. In addition, the stakeholders, either as a representative of end users, a decision maker or a developer, have different concerns, priorities and responsibilities. This paper considers introducing negotiation spiral model with supporting elements in the requirements elicitation and analysis process. Many researches show that negotiation is necessary to handle conflicts in order to gain better requirements. It is believed that the quality of intermediate deliverables like the requirements document is correlated with the quality of the final product. The advantages of implementing negotiation process are well aligned requirements by all the stakeholders, improved system quality, a sound basis for resource estimation and less resource wastage.

#### **2. Requirement Documentation**

The requirements of a software product are a list of features required by the customer. One or more managers/software engineers will usually sit down with the customer to get a list of exactly what the product should do and how it should do it. The development team will later use these requirements to design the software around the customers' expectations.

#### **3. Requirement Verification & Validation**

Validation: ensures that the software being developed (or changed) will satisfy its stakeholders – Requirements Validation checks the software requirements specification against stakeholders goals and requirements. Verification: ensures that each step followed in the process of building the software yields the right products – Requirements Verification checks the consistency of the software requirements specification artefacts and other software development products (design, implementation, ...) against the specification

#### **4. Requirement Management.**

**Requirements management** is the process of documenting, analyzing, tracing, prioritizing and agreeing on requirements and then controlling change and communicating to relevant stakeholders. It is a continuous process throughout a project. A requirement is a capability to which a project outcome (product or service) should conform.

Q.No. 6.b.

*Enlist project risk in web project according to J.Neilson*

05

Ans:

1. unclear definition of objective.

- 2.wrong target audience
- 3.development-oriented page structure.
- 4.lacking consistency due to outsourcing.
- 5.lacking budget for maintenance.
- 6.content recycling.
- 7.poor linking.
- 8.mixing internet & intranet.
- 9.confusing marketing research & usability research
- 10.underestimating strategic significance of web.

Q.No. 6.c.

**Explain task involved in risk management.**

05

**Ans:**

### **Project Risk Management**

A risk is something that may happen and if it does, will have a positive or negative impact on the project. A few points here. "That may happen" implies a probability of less than 100%. If it has a probability of 100% - in other words it will happen - it is an issue. An issue is managed differently to a risk and we will handle issue management in a later white paper. A risk must also have a probability something above 0%. It must be a chance to happen or it is not a risk.

The second thing to consider from the definition is "will have a positive or negative impact". Most people dive into the negative risks but what if something goes right?

#### **Risk Management Plan**

There are four stages to risk management planning. They are:

- Risk Identification
- Risks Quantification
- Risk Response
- Risk Monitoring and Control

Q.No. 7.a.

**Explain with diagram basic component of web application architecture.**

10

**Ans:**

### **Components of a web application architecture**

Communication between these components is generally based on the request-response principle, i.e one component(e.g, a web browser) sends a request to another component (e.g, a web browser), and the response to this request is sent back over the same communication channel(synchronous communication).

- **Client:** Generally a browser (user agent) is controlled by a user to operate the web application. The client's functionality can be expanded by installing plug-ins and applets.

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- **Firewall:** A piece of software regulating the communication between insecure networks(e.g., the Internet) and secure networks(e.g.,corporate LANs). This communication is filtered by access rules.
- **Proxy:** A proxy is typically used to temporary store web pages in cache.however, proxies can also assume other functionalities, e.g., adapting the contents for users(customization),or user tacking.
- **Web server:** A Web server is a piece of software that supports various web protocols like HTTP, and HTTPS,etc., to process client requests.
- **Database server:** this server normally supplies an organization's production data in structured form,e.g.,in tables.
- **Media server:** this component is primarily used for content streaming of non-structured bulk data(e.g.,audio or video).
- **Content management server:** similar to database server, a content management server holds content to serve an application. These contents are normally available in the form of semi-structured data, e.g.,XML documents.
- **Application server:** an application server holds the functionality required by several applications, e.g.,workflow or customization.
- **Legacy application:** A legacy application is an older system that should be integrated as an internal or external.

Q.No. 7.b.

*Explain struts with diagram.*

05

Ans:

**Struts**

The JSP Model-2 architecture enhanced by the struts open-source project of the Apache software foundation. Struts offers useful addition for web application such as error handling and internationalization.

Struts uses an XML configuration file which allows the control of the processing flow within the MVC pattern to facilitate the processing of client request.

Q.No. 7.c.

*Explain hypertext structure.*

05

Ans:

**Hypertext Structure.**

Hypertext Structure Modeling Concepts

In contrast to the content level, for which ER diagrams or class diagram are used, specialized notation are often employed to the model the hypertext structure. Hypertext structure modeling is based on the concept of hypertext, i.e., on nodes (also called pages or documents) and links between these nodes.

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The Starting point used for the creation of a hypertext structure model is usually the content model in which contains the classes and object to be made available as nodes in thehypertext. Often hypertext structure model is specified as view on the content model and is therefore sometimes also called the navigational view. Thereby node is specified as a view on the content model selecting one or more object from the content. Some methods even define t ransformation to derive link on the basis of relationship of the content level. Additional links can be added by explicit design decision. Other method model the hypertext structure independently on the content model. For example the OOHDM (object-Oriented Hypermedia Design Method) offers an approach to model scenarios, where the hypertext structure model can be built directly from navigational requirements identified by these scenarios.

