

BSCCS2001: Practice with Solutions
Week 7

1. Select the correct statement(s) from the following options: [MSQ: 2 points]

- ✓ Common Gateway Interface (CGI) is a standard interface between web and database server.
- ☐ The main function of the server side scripting is to correspond within a web-page.
- ✓ URIs can be classified as locators(URLs), or as names (URNs), or both.
- ☐ HTTP can be used to format most of the web documents into hypertext documents.

Solution:

- The Common Gateway Interface (CGI) provides the middleware between WWW servers and external databases and information sources.
- The main function of the server side scripting is to carry out a task at the server's end and then send the result to the client side.
- URNs and URLs are the subsets of the URIs.
- HTML can format most of the web documents into hypertext documents.

2. Identify the three main components of Application Architecture Layer. [MSQ: 2 points]

- ☐ Controller Layer, Data Access Layer, Backend Layer
- ☐ Presentation Layer, Controller Layer, Model Access Layer
- ✓ Presentation Layer, Middle Layer, Backend
- ✓ Presentation Layer, Business Logic Layer, Data Access Layer

Solution: Application layer consists of 3 sub-layers namely:

- Frontend or Presentation Layer
- Middle Layer or Application / Business Logic Layer
- Backend or Data Access Layer

Presentation layer follows model-view-controller (MVC) architecture.

3. Identify A, B and C marked in Figure 1.

[MCQ: 2 points]

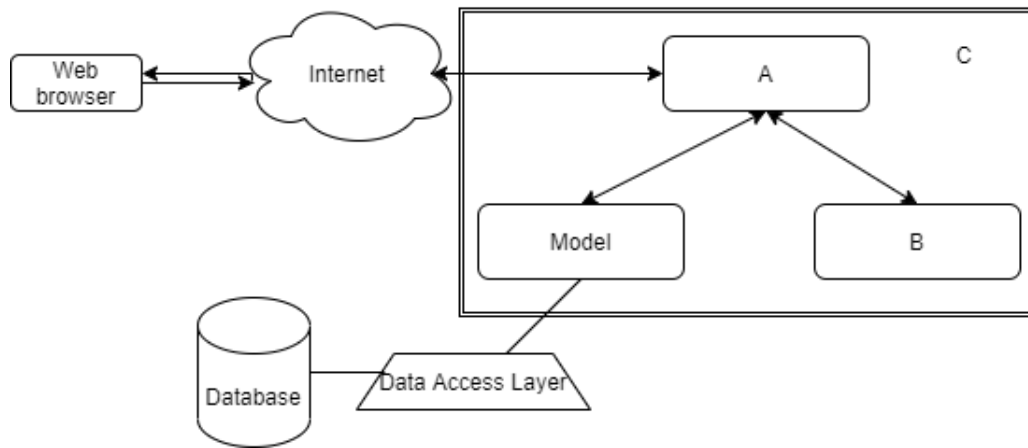


Figure 1: Web/Application Server

- ☐ A - View, B - Controller, C - Business Logic Layer,
- ☐ A - View, B - Controller, C - Presentation Layer
- ☐ A - Controller, B - View, C - Business Logic Layer
- ☒ A - Controller, B - View, C - Presentation Layer

Solution: Presentation Layer is constituted by MVC architecture where M is model, V is view, C is controller.

- The Controller component acts as an interface between Model and View components to process all the business logic and incoming requests, manipulate data using the Model component and interact with the Views to render the final output.
- The Model component corresponds to all the data-related logic that the user works with.
- The View component is used for all the UI logic of the application.

4. Which among the following is a Python library for parsing HTML? [MCQ: 2 points]

- ☐ Requests
- ✓ ☒ Beautiful Soup
- ☐ Paramiko
- ☐ Twisted Python

Solution: Beautiful Soup is an HTML parser that can handle all sorts of HTML. Requests is a powerful HTTP client library. Paramiko is used for implementing the SSH2 protocol. Twisted Python is a framework for asynchronous network programming.

5. Which of the following is/are the disadvantage(s) of using single factor authentication with password? [MSQ: 2 points]

- ✓ The password can be disclosed by guessing or sniffing of packets, if passwords are not encrypted.
- Using single factor authentication can be a time-consuming process, as it involves multiple steps like password plus one-time password sent by SMS.
- ✓ Passwords can be exposed if passwords are reused by a user across sites.
- ✓ Passwords can be captured by the specially designed spyware.

Solution: Please refer to slide: 35.13

6. Match the appropriate statements for

- a. 1-tier architecture
- b. 2-tier architecture
- c. 3-tier architecture
- d. n -tier architecture

Statement-1: It distributes different components of the 3-tiers between different servers and add interface tiers to enable interactions and load balancing.

Statement-2: It keeps all the components of an application on a single server or platform.

Statement-3: It separates its tiers as Presentation, Logical and Data Access.

Statement-4: It is based on client-server architecture, where all the interactions between client and server take place directly, without presence of any intermediate.

[MSQ: 2 points]

- ☐ a)-statement-1, b)-statement-3, c)-statement-2, and d)-statement-4.
- ☐ a)-statement-4, b)-statement-2, c)-statement-3, and d)-statement-1.
- ☐ a)-statement-4, b)-statement-3, c)-statement-2, and d)-statement-1.
- ☒ a)-statement-2, b)-statement-4, c)-statement-3, and d)-statement-1.

Solution: Please refer to slide: 31.17 - 31.20.
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7. Which of the following tasks is/are performed by a web server?

[MSQ: 2 points]

- ☐ It has the core software component, named as rendering engine, that transforms HTML documents and other resources of a web page into an interactive visual representation on a user's device.
- ☒ It receives HTTP/HTTPS requests, and responds to the requests with the content of that requested resource or an error message.
- ☒ If the requested document is an executable program, it executes the program, and sends back the HTML document that is generated.
- ☐ It is used to access World Wide Web, and it can fetch content from the Web and display it on a user's device.

Solution:

- A web server is software and underlying hardware that accepts requests via HTTP or its secure variant, HTTPS.
- A web browser or crawler, requests for a specific resource using HTTP, and the server responds with the content of that resource or an error message.
- When a web server receives a request for a document which is an executable program, it executes the program, and sends back the HTML document that is generated.

8. Which of the following tasks is/are widely performed by a client-side script?

[MSQ: 2 points]

- ☒ It can check input validity of Web pages to avoid many round trips to server.
- ☐ It can make any system call, and can also access the file system of the host machine to perform read, write operations.
- ☒ It can provide rich user interface.
- ☐ It always executes at server-end and sends the result back to the client-end.

Solution: Client-side scripts are widely used to:

- forms basis of new generation of Web applications (called Web 2.0 applications) offering rich user interfaces
- check input for validity

However, in general, client-side scripts are

- firstly downloaded at the client-end and then interpreted and executed by the browser.
- not allowed to make any system calls directly, and disallowed with dangerous actions such as file writes.

9. Which of the following is not true about ODBC?

[MSQ: 2 points]

- ☐ ODBC is designed with an objective to support various Windows versions. Thus, it is not supported by the non-Windows operating systems.
- ✓ ODBC is a standard API for database connectivity, used by the application programs to communicate with database servers.
- ☐ ODBC is a Java-based technology developed by Sun Microsystems.
- ✓ An application written using ODBC can be easily ported to heterogeneous client and server platforms.

Solution: Please refer to Slide: 33.8

10. Consider the following tasks in a Java program to execute an SQL query at database server using JDBC.

1. Create a "Statement" object
2. Use the "Statement" object to execute the SQL statement
3. Create a "Connection" object
4. Fetch the query results in a "ResultSet" object

Identify the correct order in which the tasks must be performed. [MCQ: 2 points]

- ☐ 1 → 2 → 3 → 4
- ☐ 2 → 1 → 3 →
- ☒ 3 → 2 → 1 → 4
- ☐ 3 → 1 → 2 → 4

Solution: The appropriate order must be:

1. Create a "Connection" object
2. Create a "Statement" object
3. Use the "Statement" object to execute the SQL statement
4. Fetch the query results in a "ResultSet" object

11. Among the given options, which is/are a challenge in Web Application development?
[MSQ: 2 points]

- ☐ The number of rows that have been affected (modified, inserted, or deleted) by the last `execute()` procedure.
- ✓ ☒ Knowledge of framework and platforms
- ☐ Limited computing power
- ✓ ☒ Web security threats
- ☐ Limited memory

Solution: The challenges for Web application development are:

- User interface and user experience
- Scalability
- Performance
- Knowledge of framework and platforms
- Security

Limited computing power and limited memory are the challenges for Mobile application development.