**Software Security – Bonus Task {"Khaled Shawki": "20206018", "Sohaila Gamal": "20196026"}**

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| **1.** | **Process of checking that the developer is building the ‘right’ product.** | | | |
| **A** | Verification | **B** | **Validation** |
| **C** | Testing | **D** | Maintenance |

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| **2.** | **Process of ensuring that the product being built ‘right’.** | | | |
| **A** | **Verification** | **B** | Validation |
| **C** | Testing | **D** | Maintenance |

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| **3.** | **Software Quality Factors (SQFs) Includes** | | | |
| **A** | Product operation requirements | **B** | Product revision requirements |
| **C** | Product transition requirements | **D** | **All the mentioned** |

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| **4.** | **Determines how well the software does what the customer wants** | | | |
| **A** | **Correctness** | **B** | Reliability |
| **C** | Efficiency | **D** | Integrity |

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| **5.** | **Determines how well the software does what it is supposed to do** | | | |
| **A** | Correctness | **B** | **Reliability** |
| **C** | Efficiency | **D** | Integrity |

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| **6.** | **Determines how well the system runs on the customer’s hardware** | | | |
| **A** | Correctness | **B** | Reliability |
| **C** | **Efficiency** | **D** | Integrity |

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| **7.** | **Determines how well the data is secured** | | | |
| **A** | Correctness | **B** | Reliability |
| **C** | Efficiency | **D** | **Integrity** |

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| **8.** | **Determines how easy the system is to use** | | | |
| **A** | Correctness | **B** | Reliability |
| **C** | Efficiency | **D** | **Usability** |

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| **9.** | **Determines how easily bugs can be found and ﬁxed** | | | |
| **A** | **Maintainability** | **B** | Testability |
| **C** | Flexibility | **D** | None of the above |

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| **10.** | **Determines how easily the system can be changed while in service** | | | |
| **A** | Maintainability | **B** | Testability |
| **C** | **Flexibility** | **D** | None of the above |

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| **11.** | **Determines how easily the system can be tested to show that the customer’s requirements have been met** | | | |
| **A** | Maintainability | **B** | **Testability** |
| **C** | Flexibility | **D** | None of the above |

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| **12.** | **Test unit of functionality of an application** | | | |
| **A** | **Unit Testing** | **B** | Integration Testing |
| **C** | Regression Testing | **D** | System Testing |

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| **13.** | **Test units are tested together** | | | |
| **A** | Unit Testing | **B** | **Integration Testing** |
| **C** | Regression Testing | **D** | System Testing |

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| **14.** | **It checks that fixing one bug has not introduced others.** | | | |
| **A** | Unit Testing | **B** | Integration Testing |
| **C** | **Regression Testing** | **D** | System Testing |

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| **15.** | **Test system against the customer’s requirements.** | | | |
| **A** | Unit Testing | **B** | Integration Testing |
| **C** | Regression Testing | **D** | **System Testing** |

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| **16.** | **Determines how easy it is to interface the system with another system** | | | |
| **A** | **Interoperability** | **B** | Maintainability |
| **C** | Reusability | **D** | Flexibility |

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| **17.** | **It refers to number of relationships the class has with other classes** | | | |
| **A** | **Coupling-between-objects (CBO) metric** | **B** | Number of Children (NOC) metric |
| **C** | All of the above | **D** | None of the above |

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| **18.** | **Singletons Creational pattern is a** | | | |
| **A** | Microservice Pattern | **B** | Testing Pattern |
| **C** | **Design Pattern** | **D** | Architecture Pattern |

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| **19.** | **JSON stands for** | | | |
| **A** | **JavaScript Object Notation** | **B** | JavaScript Object Normalization |
| **C** | Java Object Notation | **D** | None of the above |

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| **20.** | **Used to sign session cookies for protection against cookie data tampering** | | | |
| **A** | Public Key | **B** | OTP Key |
| **C** | **Private Key** | **D** | None of the above |

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| **21.** | **It refers to the broad structure of a software system, it describes its major parts, and how they are put together and interact** | | | |
| **A** | Software Requirements | **B** | Software Testing |
| **C** | Software Maintainability | **D** | **Software Architecture** |

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| **22.** | **Software architectural views are** | | | |
| **A** | Logical | **B** | Process |
| **C** | Deployment | **D** | **All the mentioned** |

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| **23.** | **is an approach to build enterprise systems that deliver application functionality either as services to end-user applications or to build other services.** | | | |
| **A** | **Service-oriented architecture** | **B** | Web Service architecture |
| **C** | Microservice architecture | **D** | MVC architecture |

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| **24.** | **software module designed to support interoperable machine-to-machine interaction over a network** | | | |
| **A** | Service-oriented architecture | **B** | **Web Service** |
| **C** | Microservice architecture | **D** | MVC architecture |

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| **25.** | **{**  **"Name": "Sanad",**  **"Author": "Khaled Shawki",**  **"mail": "khalid@gamil.com"**  **}**  **The Previous code is an example of the format:** | | | |
| **A** | **JSON** | **B** | JSX |
| **C** | XML | **D** | None of the above |

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| **26.** | **<employees>   <employee>     <firstName>Khaled</firstName>**  **<lastName>Shawki</lastName>   </employee> </employees>**  **The Previous code is an example of the format:** | | | |
| **A** | JSON | **B** | JSX |
| **C** | **XML** | **D** | None of the above |

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| **27.** | **It refers to the exploitation of a valid session assigned to a user.** | | | |
| **A** | **Session Hijacking** | **B** | Cross-site scripting |
| **C** | Authentication | **D** | None of the above |

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| **28.** | **Used for static analysis will take your code as input and analyze each line for any insecure functions or coding practices** | | | |
| **A** | **SAST** | **B** | DAST |
| **C** | NAST | **D** | KAHA |

**Use the following code to answer questions 29 to 39**

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| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31  32  33  34  35  36  37  38  39  40  41  42 | **from** **flask** **import** Flask, jsonify, request  app = Flask(\_\_name\_\_)  # Sample data  books = [  {'id': **1**, 'title': 'Book 1'},  {'id': **2**, 'title': 'Book 2'}  ]    **@app**.route('/books', methods=['GET'])  **def** **get\_books**():  **return** jsonify(books)    **@app**.route('/books/<int:book\_id>', methods=['GET'])  **def** **get\_book**(book\_id):  book = next((book **for** book **in** books **if** book['id'] == book\_id), **None**)  **if** book:  **return** jsonify(book)  **else**:  **return** jsonify({'error': 'Book not found'}), **404**  **@app**.route('/books', methods=['POST'])  **def** **create\_book**():  new\_book = {'id': len(books) + **1**, 'title': request.json['title']}  books.append(new\_book)  **return** jsonify(new\_book), **201**  **@app**.route('/books/<int:book\_id>', methods=['DELETE'])  **def** **delete\_book**(book\_id):  book = next((book **for** book **in** books **if** book['id'] == book\_id), **None**)  **if** book:  books.remove(book)  **return** jsonify({'message': 'Book deleted'})  **else**:  **return** jsonify({'error': 'Book not found'}), **404**  **if** \_\_name\_\_ == '\_\_main\_\_':  app.run() |

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| **1.** | **What is the purpose of the Flask library in this code?** | |
| **A** | **To handle HTTP requests and responses** |
| **B** | To store and retrieve data |
| **C** | To perform database operations |
| **D** | None of the above |

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| **2.** | **What HTTP status code will be returned if a requested book is not found?** | | | |
| **A** | 200 OK | **B** | 201 Created |
| **C** | 400 Bad Request | **D** | **404 Not Found** |

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| **29.** | **What does the “/books” route with the GET method do?** | |
| **A** | **Retrieves all books from the database** |
| **B** | Creates a new book in the database |
| C | Deletes a specific book from the database |
| **D** | Updates a specific book in the database |

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| **30.** | **What does the “/books/<int:book\_id>” route with the GET method do?** | |
| **A** | Retrieves all books from the database |
| **B** | Creates a new book in the database |
| **C** | Deletes a specific book from the database |
| **D** | **Get a specific book in the database** |

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| **31.** | **What does the “/books” route with the POST method do?** | |
| **A** | Retrieves all books from the database |
| **B** | **Creates a new book in the database** |
| **C** | Deletes a specific book from the database |
| **D** | Updates a specific book in the database |

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| **32.** | **What is the purpose of the “Jsonify” function in this code?** | |
| **A** | Converts JSON data to Python objects |
| **B** | **Converts Python objects to JSON data** |
| **C** | Converts JSON data to HTML format |
| **D** | Converts HTML format to JSON data |

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| **33.** | **How are new books added to the books list?** | |
| **A** | By using the GET method on the ‘/books’ route |
| **B** | **By using the POST method on the ‘/books’ route** |
| **C** | By using the DELETE method on the ‘/books’ route |
| **D** | By using the PUT method on the ‘/books/<int:book\_id>’ route |

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| **34.** | **What is the purpose of the if \_\_name\_\_ == '\_\_main\_\_': condition at the end of the code?** | |
| **A** | **It ensures the code is only executed if the script is run directly** |
| **B** | It checks if the server is running in the main thread |
| **C** | It defines the main function for the Flask application |
| **D** | It imports the necessary modules for the Flask application |

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| **35.** | **What is the purpose of the 404 status code in this code?** | |
| **A** | Indicates a successful request |
| **B** | Indicates a resource was created successfully |
| **C** | Indicates a client error (resource not found) |
| **D** | **Indicates a server error** |

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| **36.** | **How are the book objects stored in memory in this code?** | |
| **A** | In a local file on the server |
| **B** | In a remote database |
| **C** | **In a list called books** |
| **D** | In a text file |

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| **37.** | **What is the endpoint to retrieve all books?** | |
| **A** | **‘http://127.0.0.1/books’** |
| **B** | ‘http://127.0.0.1/books/int:book\_id’ |
| **C** | ‘http://127.0.0.1/str:book\_title’ |
| **D** | ‘http://127.0.0.1/books/all’ |

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| **38.** | **What is the response code when a book is successfully deleted?** | |
| **A** | **204** |
| **B** | 200 |
| **C** | 201 |
| **D** | 400 |

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| **39.** | **Which library is imported to handle HTTP requests and responses in the code?** | |
| **A** | Flask |
| **B** | Jsonify |
| **C** | Request |
| **D** | Python |

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| **40.** | **Which of the following best describes a threat in software security?** | |
| **A** | A weakness or flaw in software code |
| **B** | **An event or circumstance that has the potential to cause harm to software** |
| **C** | The likelihood of a software system being attacked |
| **D** | The impact or consequence of a security breach |

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| **41.** | **What is a vulnerability in software security?** | |
| **A** | The likelihood of a security incident occurring |
| **B** | **A weakness or flaw in software that can be exploited** |
| **C** | The potential harm caused by a security incident |
| **D** | The level of risk associated with a software system |

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| **42.** | **Risk in software security is defined as:** | |
| **A** | The combination of threats and vulnerabilities |
| **B** | The likelihood of a security incident occurring |
| **C** | **The potential impact or consequence of a security incident** |
| **D** | The measures in place to protect against threats and vulnerabilities |

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| **43.** | **Which of the following best defines confidentiality?** | |
| **A** | **Protecting information from unauthorized disclosure** |
| **B** | Ensuring that information is accurate and reliable |
| **C** | Making information available when needed |
| **D** | Ensuring that information is not altered or tampered with |

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| **44.** | **What does the integrity principle of the CIA triad in security refer to?** | |
| **A** | Keeping information confidential and preventing unauthorized access |
| **B** | **Ensuring that information is accurate, complete, and trustworthy** |
| **C** | Making sure that information is available and accessible |
| **D** | Safeguarding information against loss or destruction |

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| **45.** | **Availability, as a principle of the CIA triad, means:** | |
| **A** | **Ensuring that information is accessible to authorized individuals** |
| **B** | Protecting information from unauthorized modification or deletion |
| **C** | Maintaining the privacy and secrecy of sensitive information |
| **D** | Verifying the accuracy and consistency of information |

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| **46.** | **What is the primary purpose of authentication in cybersecurity?** | |
| **A** | Ensuring data confidentiality |
| **B** | **Verifying the identity of users or entities** |
| **C** | Controlling access to resources |
| **D** | Monitoring and logging user activities |

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| **47.** | **What does authorization refer to in the context of AAA?** | |
| **A** | Verifying the integrity of data |
| **B** | Ensuring data availability |
| **C** | **Granting or denying access to specific resources** |
| **D** | Recording and tracking user actions |

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| **48.** | **What is the role of accounting in AAA?** | |
| **A** | Authenticating users and entities |
| **B** | Authorizing access to resources |
| **C** | **Recording and tracking user activities and resource usage** |
| **D** | Encrypting data to protect its confidentiality |

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| **49.** | **What is the purpose of Segregation of Duties in cybersecurity?** | |
| **A** | Preventing conflicts of interest and reducing the risk of fraud or unauthorized activities |
| **B** | **Ensuring that all users have the same level of access to resources** |
| **C** | Granting users access to resources based on their job titles |
| **D** | Sharing administrative privileges among all users |

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| **50.** | **What does the principle of Need to Know in cybersecurity entail?** | |
| **A** | Providing users with access to all available information |
| **B** | **Restricting access to sensitive information to only those who require it for their job responsibilities** |
| **C** | Giving all users the same level of access to data and resources |
| **D** | Sharing sensitive information with anyone who asks for it |

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| **51.** | **What is the principle of Least Privilege in cybersecurity?** | |
| **A** | **Providing users with the minimum level of access necessary to perform their job functions** |
| **B** | Sharing all available information with every user |
| **C** | Granting administrative privileges to all users for convenience |
| **D** | Assigning the highest level of access to all users by default |

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| **52.** | **XSS (Cross-Site Scripting) is a vulnerability that primarily affects:** | | | |
| **A** | **Web browsers** | **B** | Database systems |
| **C** | Network Infrastructure | **D** | Network infrastructure |

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| **53.** | **Which of the following best describes SQL Injection?** | |
| **A** | A technique used to inject malicious scripts into web pages viewed by users |
| **B** | **A method of gaining unauthorized access to a database by manipulating SQL queries** |
| **C** | A type of malware that spreads through SQL databases |
| **D** | A method of intercepting network traffic to obtain sensitive information |

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| **54.** | **What is the main goal of an attacker in an XSS or SQL Injection attack?** | |
| **A** | To gain administrative access to the target system |
| **B** | **To extract sensitive information from the target system** |
| **C** | To disrupt the availability of the target system |
| **D** | To install malware on the target system |

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| **55.** | **process of transforming the plaintext into an unreadable form** | | | |
| **A** | **Encryption** | **B** | Decryption |
| **C** | Transposition | **D** | None of the above |

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| **56.** | **It is a substitution technique that shifts each letter of the plaintext by number of places which is the key to produce the ciphertext** | | | |
| **A** | **Caesar cipher** | **B** | Vernam cipher |
| **C** | Encryption | **D** | None of the above |

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| **57.** | **It is a substitution technique that shifts each letter of the plaintext by number of places which is the key to produce the ciphertext** | | | |
| **A** | **Caesar cipher** | **B** | Vernam cipher |
| **C** | Encryption | **D** | None of the above |

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| **58.** | **It is a substitution technique that implements exclusive or operation (^) on each bit of plaintext with the corresponding bit in key, thus the key length must equal to the plaintext length.** | | | |
| **A** | Caesar cipher | **B** | **Vernam cipher** |
| **C** | Transposition ciphers | **D** | Rail fence cipher |

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| **59.** | **It is written as a sequence of diagonals with any depth and then read off as a sequence of rows.** | | | |
| **A** | Caesar cipher | **B** | Vernam cipher |
| **C** | Transposition ciphers | **D** | **Rail fence cipher** |

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| **60.** | **Write letters of message out in rows over a specified number of columns. Then reorder the columns according to some key before reading off the rows.** | | | |
| **A** | Caesar cipher | **B** | Vernam cipher |
| **C** | **Transposition ciphers** | **D** | Rail fence cipher |

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| **61.** | **Which of the following is not an example of a block cipher?** | | | |
| **A** | DES | **B** | **Caesar cipher** |
| **C** | IDEA | **D** | Twofish |

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| **62.** | **In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the plain-text is processed 1-bit at a time & a series of actions is carried out on it for generating one bit of cipher-text.** | | | |
| **A** | Block Cipher | **B** | Stream cipher |
| **C** | One-Time pad | **D** | Vigenere Cipher |

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| **63.** | **This helps in identifying the origin of information and authentic user. This referred to here as** | | | |
| **A** | **Authenticity** | **B** | Availability |
| **C** | Integrity | **D** | Confidentiality |

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| **64.** | **\_\_\_\_ of information means, only authorised users are capable of accessing the information.** | | | |
| **A** | **Availability** | **B** | Integrity |
| **C** | Confidentiality | **D** | Non-repudiation |

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| **65.** | **CIA triad is also known as** | |
| **A** | NIC (Non-repudiation, Integrity, Confidentiality) |
| **B** | AIN (Availability, Integrity, Non-repudiation) |
| **C** | AIC (Authenticity, Integrity, Confidentiality) |
| **D** | **AIC (Availability, Integrity, Confidentiality)** |

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| **64.** |  | | | |
| **A** |  | **B** |  |
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| **64.** |  | | | |
| **A** |  | **B** |  |
| **C** |  | **D** |  |

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| **64.** |  | | | |
| **A** |  | **B** |  |
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| **64.** |  | | | |
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| **65.** |  | |
| **A** |  |
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| **64.** |  | | | |
| **A** |  | **B** |  |
| **C** |  | **D** |  |

**True & False**

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| **1.** | **Risk and vulnerabilities are the same things.** |  |
| **2.** | **SQL Injection is a one of Common Software Vulnerabilities.** |  |
| **3.** | **Cross-site Scripting is not a one of Common Software Vulnerabilities.** |  |
| **4.** | **Passive attack related to message modification.** |  |
| **5.** | **Active attack related to message reading only.** |  |
| **6.** | **Palin text is not a component of block cipher model.** |  |
| **7.** | **All users must have the same privilege.** |  |
| **8.** | **No need for input validation** |  |
| **9.** | **Validation is occurring on client-side only** |  |
| **10.** | **You must check for input validity at the server** |  |
| **11.** | **block cipher using key with length 128 bits is more secure than 64 bits.** |  |
| **12.** | **Security steps begin after software design.** |  |
| **13.** | **For Critical data you must not use http request rather than https** |  |
| **14.** | **DES is a asymmetric block cipher** |  |
| **15.** | **DES used in digital signature** |  |