Software Security – Bonus Task

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1. **Process of checking that the developer is building the 'right' product.**

   A Verification
   B **Validation**
   C Testing
   D Maintenance

2. **Process of ensuring that the product being built 'right'.**

   A **Verification**
   B Validation
   C Testing
   D Maintenance

3. **Software Quality Factors (SQFs) Includes**

   A Product operation requirements
   B Product revision requirements
   C Product transition requirements
   D **All the mentioned**

4. **Determines how well the software does what the customer wants**

   A **Correctness**
   B Reliability
   C Efficiency
   D Integrity

5. **Determines how well the software does what it is supposed to do**

   A Correctness
   B **Reliability**
   C Efficiency
   D Integrity

6. **Determines how well the system runs on the customer's hardware**

   A Correctness
   B Reliability
   C **Efficiency**
   D Integrity

7. **Determines how well the data is secured**

   A Correctness
   B Reliability
   C Efficiency
   D **Integrity**

8. **Determines how easy the system is to use**

   A Correctness
   B Reliability
   C Efficiency
   D **Usability**

9. **Determines how easily bugs can be found and fixed**

   A **Maintainability**
   B Testability
   C Flexibility
   D None of the above

10. **Determines how easily the system can be changed while in service**

A Maintainability
B Testability
C **Flexibility**
D None of the above

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

12. **Test unit of functionality of an application**

A **Unit Testing**
B Integration Testing
C Regression Testing
D System Testing

13. **Test units are tested together**

A Unit Testing
B **Integration Testing**
C Regression Testing
D System Testing

14. **It checks that fixing one bug has not introduced others.**

A Unit Testing
B Integration Testing
C **Regression Testing**
D System Testing

15. **Test system against the customer's requirements.**

A Unit Testing
B Integration Testing
C Regression Testing
D **System Testing**

16. **Determines how easy it is to interface the system with another system**

A **Interoperability**
B Maintainability
C Reusability
D Flexibility

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

18. **Singletons Creational pattern is a**

A Microservice Pattern
B Testing Pattern
C **Design Pattern**
D Architecture Pattern

19. **JSON stands for**

A **JavaScript Object Notation**
B JavaScript Object Normalization
C Java Object Notation
D None of the above

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

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**

22. **Software architectural views are**

A Logical
B Process
C Deployment
D **All the mentioned**

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

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

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

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

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

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

```
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()
```

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

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**

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

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**

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

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

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

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

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**

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

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'

38. **What is the response code when a book is successfully deleted?**

A **204**
B 200
C 201
D 400

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

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

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

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

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

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

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

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

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

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

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

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

52. **XSS (Cross-Site Scripting) is a vulnerability that primarily affects:**

A **Web browsers**

B Database systems

C Network Infrastructure

D Network infrastructure

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

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

55. **process of transforming the plaintext into an unreadable form**

A **Encryption**

B Decryption

C Transposition

D None of the above

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

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

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

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**

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

61. **Which of the following is not an example of a block cipher?**

A DES **B** **Caesar cipher**

C IDEA **D** Twofish

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

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

64. **_____ of information means, only authorized users are capable of accessing the information.**

A **Availability** **B** Integrity

C Confidentiality **D** Non-repudiation

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)**

66. **Which number of independent paths of the following adds 1 to cyclomatic complexity, start counting from 1:**

A (while, do while, for) loops
B Variable initialization
C Assign operation
D None of the above

67. **What is the purpose of the route() decorator in Flask?**

A To create instance of the Flask application
B To import the Flask class
C To trigger a specific URL for a function
D To generate URLs for a particular function

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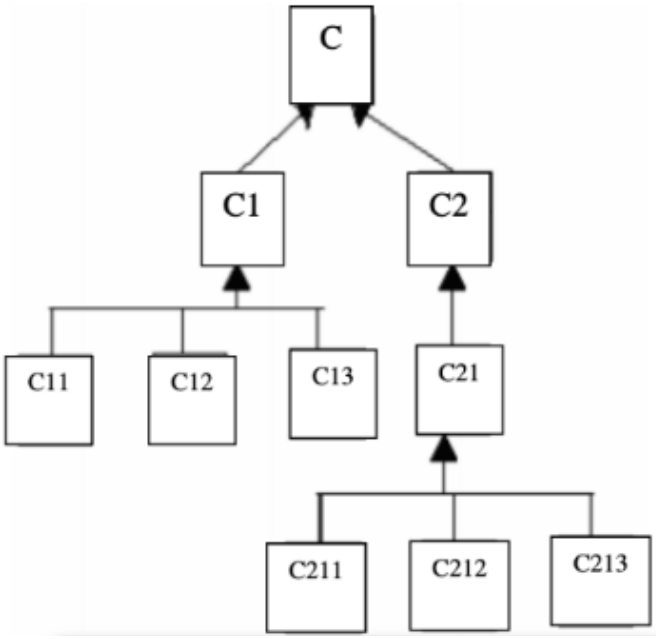
68. **What is the DIT for class C11**

A 2
B 3
C 1
D 4

69. **What is the DIT for class C213, C2**

A 3,0
B 2,0
C 1,0
D 3,1



70.
```
If (Condition 1)
    Statement 1

Else
    Statement 2

If (Condition 2)
Statement 3

Else
Statement 4
```

Cyclomatic Complexity for this program will be

A 4
B 2
C 5
D 3

Use the following code to answer questions 71 to 73

A web server has been running for a month. From the log files for that month we see that, of 2500 accesses, 120 attacks were made. Of these, 60 were denial-of-service attacks, of which 10 were successful, 35 were password guessing (of which none were successful) and 25 were accidental attacks (caused by errors on the part of the user), of which 25 were successful

71.	Denial of service threat, security			
	A	10/2500, 10/60	**B**	10/2500, 10/50
	C	60/2500, 50/60	**D**	60/2500, 50/50

72.	Password guessing threat, security			
	A	35/2500, 0/35	**B**	0/2500, 0/35
	C	35/2500, 35/35	**D**	0/2500, 35/35

73.	Accidental threat, security			
	A	25/2000, 0/25	**B**	25/2500, 0/25
	C	0/2500, 0/25	**D**	25/2500, 25/25

True & False

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