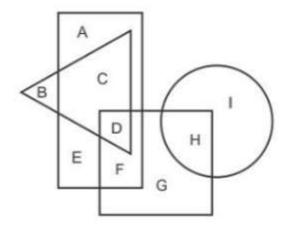
Trainee Software Engineer (TSE) Test

Analytical Abilities

Suppose you have 10 balls in a jar. 5 of them are red and 5 of them are white. If you pick randomly, minimum how many balls you have to pick to get at least 3 same color balls in the worst case?

- \bigcirc 3
- () 4
- 5
 - \bigcirc 6

In the following figure, the rectangle represents Physicians, circle represents Racers, triangle represents Writers and square represents Mothers. Which set of letters represents Mothers who are not Racers?



- FGH
- ECA
- **∠** DFG
 - O DGFI

Find the number of triangles in the given figure?



- \bigcirc 5
- 0 8
- \bigcirc 9
- 40 10

Anik and Sazid are two shopkeepers who sit side by side. Polok goes to Sazid's shop and asks for a product which costs 300 TK. Sazid also bought this for 300 TK previously. Polok gave Sazid a 1000 TAKA note but due to lack of changes Sazid went to Anik's shop, got the change from Anik and kept 300 for himself and returned 700 TK to Polok. Later Anik comes to Sazid with the 1000 TAKA note saying "this note is duplicate bro!" and takes his money back. How much loss did Sazid face?"

700 TK

1300 TK

0 TK

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Trainee Software Engineer (TSE) Test API's You're designing an API for WellDev, a recruitment management system, and there is a need to modify the job titles of posted positions. Which HTTP method is most appropriate for this specific update operation? **GET**) POST PUT PATCH

What is the difference between PUT and PATCH methods in REST API?
O PUT is used for creating resources, while PATCH is used for updating resources
PUT updates the entire resource, while PATCH updates only specific fields of a resource
O PUT requires authentication, while PATCH does not
PUT is idempotent, while PATCH is not
When designing a RESTful API, what is the significance of the HTTP status code 429?
O It indicates that the requested resource has been permanently moved to a different URI.
O It signifies that the request has been successfully processed and the response is available in the response body.
It is used to inform the client that the server is not prepared to handle the request due to too many requests being made, indicating rate limiting or throttling.
It represents an internal server error, typically a 500-series status code.
When designing an API, what are the key advantages of implementing rate limiting and throttling mechanisms?
Protecting sensitive user data from unauthorized access.
Ensuring that API endpoints are always available and responsive.
Reducing the need for proper authentication and authorization.
Enhancing the clarity and simplicity of API documentation.

In the context of RESTful APIs, what does the HTTP status code "410 Gone" indicate?					
The request has been successfully processed					
The resource has moved temporarily to a different URL					
The resource is no longer available at the requested URL, and it won't be available in the future					
The server encountered an error while processing the request					
What is the primary difference between SOAP and RESTful APIs?					
SOAP is protocol-agnostic, while REST is based on HTTP					
REST uses XML for data exchange, while SOAP uses JSON					
O SOAP is stateless, while REST allows for stateful interactions					
REST supports only synchronous communication, while SOAP supports both synchronous and asynchronous communication					
Back Next Page 3 of 12 Clear form					

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Trainee Software Engineer (TSE) Test **Database** Which replication model is most suitable for scenarios where different geographic regions need to update the same dataset independently? **Snapshot Replication** Master-Slave Replication Multi-Master Replication Query Replication Which of the following is the column in structure of index? search key data reference Both a and b none of the above

Which join is equivalent to Cartesian Product?
O Inner Join
Outer Join
Cross Join
O Natural Join
Which of the following is a common characteristic of NoSQL databases?
They exclusively use the SQL query language
They can handle unstructured and semi-structured data efficiently
They are primarily used for traditional relational data modeling
They are best suited for highly structured data
The 'Having' clause does which of the following:
acts like a WHERE clause but is used for groups rather than rows.
acts like a WHERE clause but is used for rows rather than columns.
acts like a WHERE clause but is used for columns rather than groups.
acts EXACTLY like a WHERE clause.

When des	signing a RE	STful API, what is	s the sign	ificance of the	HTTP statu	ıs code
O It ind	icates that the	e requested resourc	ce has bee	n permanently n	noved to a di	fferent
()	nifies that the able in the res	request has been s ponse body	successfu	lly processed and	d the respon	se is
due t	o too many re	the client that the equests being made	e, indicatin	g rate limiting or	throttling	quest
O It rep	resents an int	ernal server error, t	typically a	500-series status	s code	
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 ${\color{red}\textbf{Google}}\, \textbf{Forms}$

Trainee Software Engineer (TSE) Test **Data Structure** In a binary tree, the root node has two child nodes and the left child node also has two child nodes. Is it a full binary tree or Complete Binary tree? Full binary tree. Complete Binary tree. Both. None of them.

Inserting an item into the stack when the stack is not full is called Operation and deletion of items from the stack, when the stack is not empty is calledoperation.
push, pop
opop, push
insert, delete
O delete, insert
In WellDev, you are tasked with storing information about millions of products, each with a unique identifier (product ID). You frequently need to retrieve product details by their IDs to ensure efficient user interactions. Which data structure would be most advantageous for this scenario?
Hash Map
C Linked List
O Binary Search Tree
Queue
Consider a complete binary tree where the left and the right subtrees of the root are max-heaps. The lower bound for the number of operations to convert the tree to a heap is
$\Omega(\log n)$
$\bigcap \Omega(n)$
\bigcirc $\Omega(nlogn)$
\bigcap $\Omega(n2)$

Which of the following is false about a Heap? Every Heap is a complete binary tree Time complexity for building a Heap from an array is in a min heap, the value of each parent node is great nodes Both b & c How many spanning trees can be formed from a cordinate of the cordi	er than or equal to its child
 Time complexity for building a Heap from an array is in a min heap, the value of each parent node is great nodes Both b & c How many spanning trees can be formed from a cor 15 2 75 125 The order of an internal node in a B+ tree index is the children it can have. Suppose that a child pointer tal value takes 14 bytes, and the block size is 512 bytes 	er than or equal to its child
In a min heap, the value of each parent node is great nodes Both b & c How many spanning trees can be formed from a cor 15 2 75 125 The order of an internal node in a B+ tree index is the children it can have. Suppose that a child pointer tal value takes 14 bytes, and the block size is 512 bytes.	er than or equal to its child
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242526	ces 6 bytes, the search field
O 27 Back Next Pa	

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O Ω(n2)

Which of	f the followi	ng is false about a Heap?	
O Ever	y Heap is a c	omplete binary tree	
○ Time	e complexity	for building a Heap from an array is O(n)	
O In a	•	e value of each parent node is greater than or equal to its	child
O Both	ıb&c		
How ma	ny spanning	trees can be formed from a complete graph with 5	vertices?
O 15			
O 2			
75			
O 125			
children	it can have. kes 14 bytes	rnal node in a B+ tree index is the maximum number Suppose that a child pointer takes 6 bytes, the sea s, and the block size is 512 bytes. What is the order	rch field
O 24			
O 25			
O 26			
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Trainee Software Engineer (TSE) Test **00P** Suppose, there is a class A with method writeHelloWorld(), two other classes B and C inherits this class A and both overrides the method. Another class D, inherits both B and C. Now If an object of class D calls the method writeHelloWorld() which implementation of the method will be called?



Identify the incorrect constructor type?
Friend Constructor
Copy Constructor
O Parameterized Constructor
O Default Constructor
What is the role of access modifiers in encapsulation?
To control the visibility and accessibility of class members
To establish relationships between classes
To specify the names of attributes and methods
To define the order in which methods are executed
Choose the option below which is shown by function overriding.
Polymorphism
Abstraction
Inheritance
Encapsulation

Total types of polymorphism in C++ are?
O 1
2
O 3
O 4
Which among the following is safe?
Upcasting
O Downcasting
Both upcasting and downcasting
If upcasting is safe then downcasting is not, and vice versa
What is the primary advantage of composition over inheritance in OOP?
Composition promotes code reusability.
Composition provides a stronger "is-a" relationship between classes.
Composition allows for more flexibility and reduces coupling.
Composition simplifies the design of complex class hierarchies.
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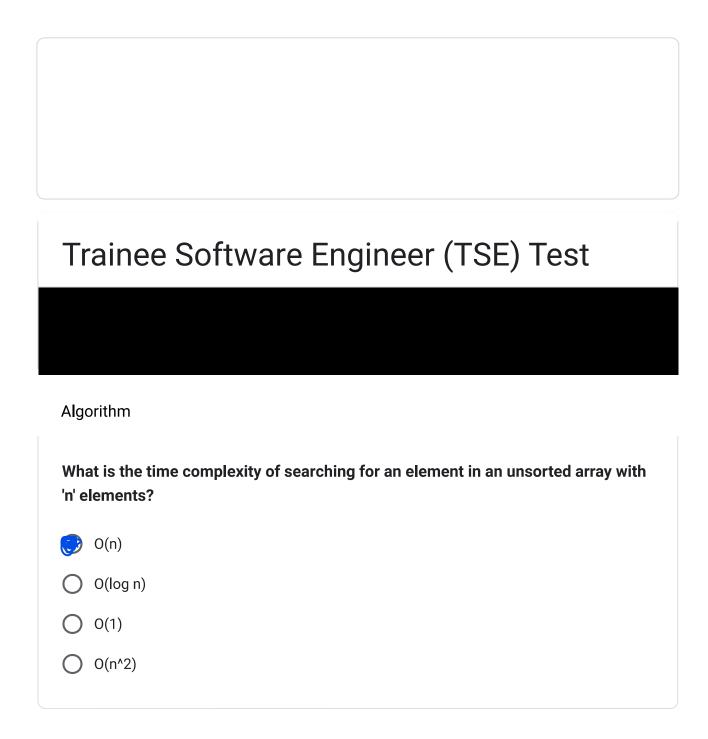
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Identify the incorrect constructor type?
Friend Constructor
Ocopy Constructor
O Parameterized Constructor
O Default Constructor
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In an unsorted array of length 7, all the elements on the left side of the 4th element are lesser than it and the elements on the right side of the 4th element are greater. In such a scenario, which sorting algorithm would be the best choice in terms of both time complexity and space complexity?
O Insertion sort
Ouick sort
O Bubble sort
Merge sort
What is the average case time complexity of binary search using recursion?
O(nlogn)
O(logn)
O(n)
O(n2)
Which sorting algorithm is most efficient for sorting a linked list?
Quick Sort
Merge Sort
O Bubble Sort
Selection Sort

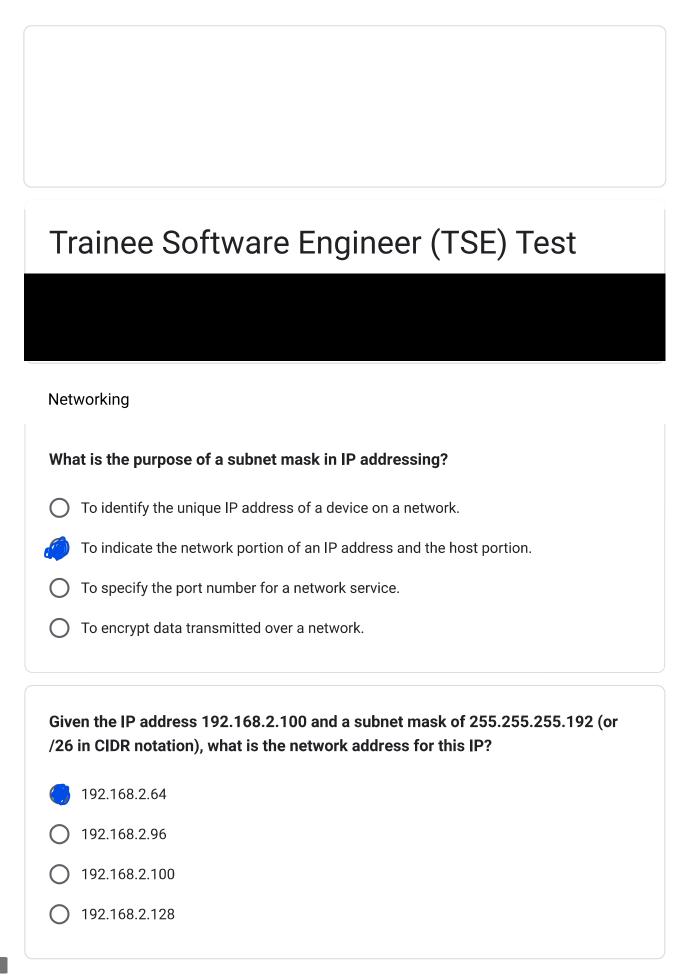
You are given a large dataset of text documents and need to perform efficient text search operations. Which data structure would be most suitable for this task?
Array
C Linked List
Trie Trie
O Heap
You need to find all possible solutions to the N-WellDev puzzle. In the N-WellDev puzzle, you are given an N x N chessboard, and you need to place N queens on the board in such a way that no two queens threaten each other. Specifically, no two queens should be in the same row, column, or diagonal.
Which approach can you use to efficiently solve this problem?
Recursion
O Dynamic programming
O Divide and conquer
Backtracking
What is the primary purpose of memoization?
To store intermediate results and avoid redundant calculations in dynamic programming
To sort data in a more efficient way
To improve the accuracy of floating-point calculations
To allocate memory for data structures

Trainee Software Engineer (TSE) Test **Design Pattern** Which design pattern is used to create an object with a fixed set of properties and optional properties with default values? Builder Pattern Adapter Pattern **Command Pattern** Abstract Factory Pattern

What problem does the singleton design pattern solve?
It ensures that a class has only one instance and provides a global point of access to it
O It separates the construction of a complex object from its representation
O It defines an interface for creating an object, but leaves the choice of its type to the subclasses
It allows a method to operate on objects of different types
What is the difference between Model-View-Presenter (MVP) and Model-View-ViewModel (MVVM) design patterns?
Presenter can hold reference of View but ViewModel cannot
Presenter can contain Observers but ViewModel cannot
ViewModel can be tested using Unit test but Presenter cannot
None of the above
What is the purpose of the "Strategy" pattern in design patterns?
To provide a way to access elements of an object's internal representation
To allow an object to alter its behavior when its internal state changes
To define a family of algorithms, encapsulate each one, and make them interchangeable
To add responsibilities to objects dynamically without affecting their behavior

Back Next Page 8 of 12 Clear f	orm
It involves creating objects based on a prototype instance	
It is primarily used to add new responsibilities to an object dynamically	
It provides a unified interface for a set of interfaces in a subsystem	
It involves creating duplicate instances of an object to save memory	
In the context of the Decorator Pattern, which statement is true?	

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What is the time complexity of the below code?



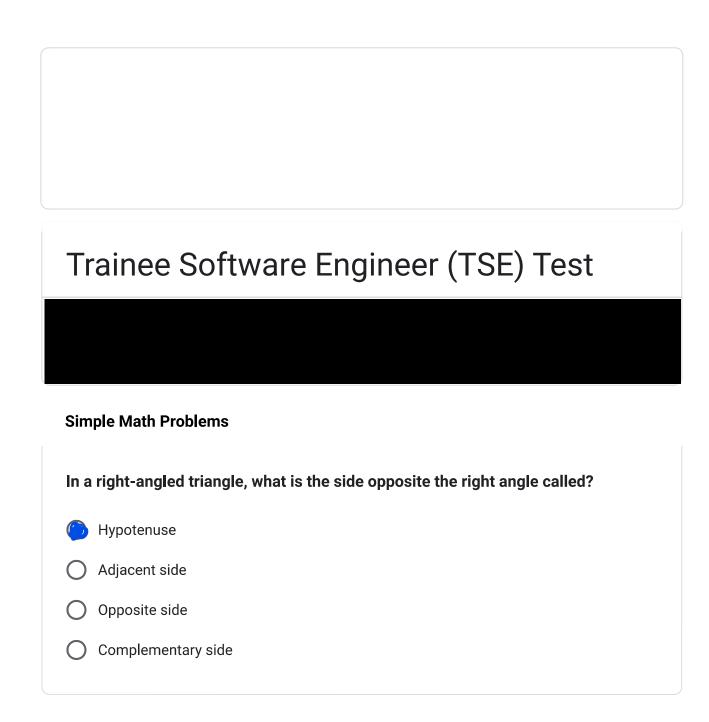
- O(N)
- \bigcirc O(Sqrt(N))
- \bigcirc O(N / 2)
- O(log N)

What is the default subnet mask for a Class B IP address?

- 255.0.0.0
- **)** 255.255.0.0
- 255.255.255.0
- 255.255.255

Which layer of the OSI model is responsible for logical addressing and routing of data packets?

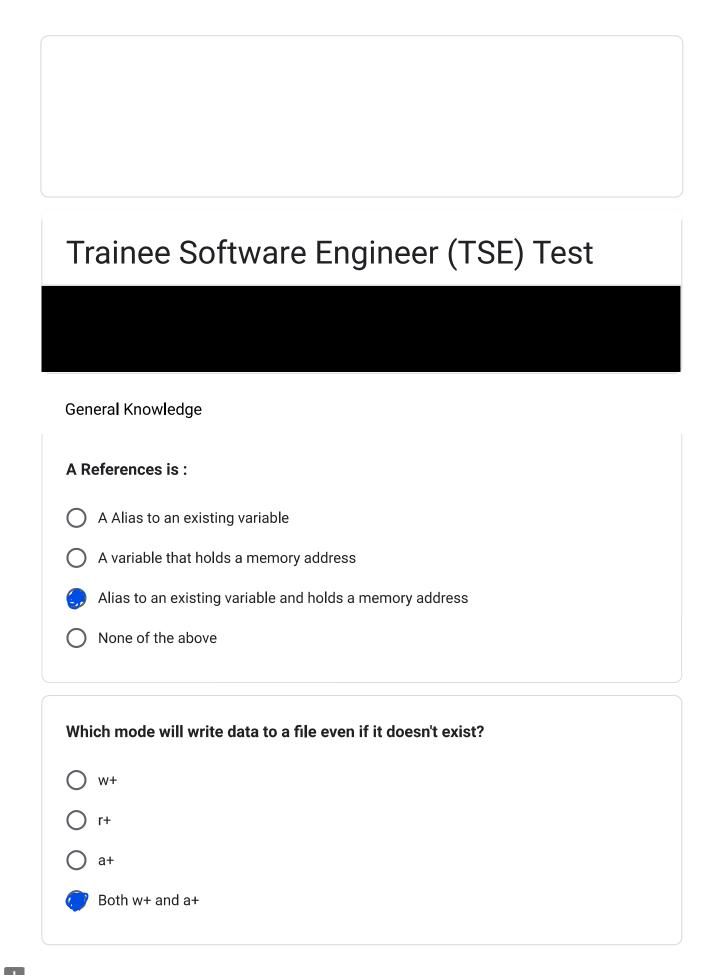
- O Data Link Layer
- Network Layer
- Transport Layer
- Application Layer



A bakery sells cakes in three different sizes: small, medium, and large. The ratio of the number of small cakes to medium cakes to large cakes sold in a day is 2:3:5. If they sell a total of 200 cakes in a day, how many medium cakes were sold?
O 20
O 30
O 50
6 0
A train travels from City A to City B at a constant speed of 60 miles per hour and returns from City B to City A at a constant speed of 40 miles per hour. The total round trip takes 10 hours, including a 1-hour stop at City B. What is the distance between City A and City B?
O 160 miles
O 400 miles
② 216 miles
O 220 miles
If you have a circle with a radius of 5 centimeters, what is its approximate circumference?
O 10 cm
31.4 cm
O 25 cm
15.7 cm

		on history, 5 books on arts, and 3 science what is the probability that it is not a histo	
3/12			
O 4/12			
8/12			
9/12			
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When did the great depression take place?
(**) 1929-1939
O 1921-1936
1952-1968
O 1855-1890
What is the second law of thermodynamics?
Energy cannot be created or destroyed
For a spontaneous process, the entropy of the universe increases
A perfect crystal at zero Kelvin has zero entropy
O If two bodies are individually in equilibrium with a separate third body, then the first two bodies are also in thermal equilibrium with each other
In computer networking, what does the acronym "LAN" typically stand for?
Cocal Area Network
O Long Accessible Network
C Limited Area Node
C Link Authorization Network
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Trainee Software Engineer (TSE) Test

Programming

for (int i = 0; i <= 4; i++) { printf("I love programming\n"); } If this is the condition of a for loop, what is the value of i after the loop ends?

- () 3
- () 4
- \bigcirc 2

```
In the following code, what will be printed as the value of i ?
int i = 0;

for (i = 0; i <= 9; i++) {
    System.out.println("Hello there!");
}
System.out.println(i);

    8
    9
    10
    Compilation Error
```

What will be the output of the following C++ code?

```
#include <iostream>
using namespace std;
int main() {
  int array[] = {1, 2, 3, 4, 5};
  for (int i = 0; i < 5; ++i) {
    cout << array[i] << " ";
  }
  return 0;
}
    12345
    54321
    01234
0 43210
```

```
C/C++ int fibonacci(int n) {
  if (n \le 0)
    return 0;
  else if (n == 1)
    return 1;
  else
    return fibonacci(n - 1) + fibonacci(n - 2);
}
What type of function is used here?
    Pure function
    Recursive function
    Curried function
    Abstract function
If the marked price of 30 articles is equal to selling price of 40 articles, then find
the % Discount?
```

25%

33.33%

75%

20%

0.28, 0.56, 1.68,
2.68
(1) 6.72
7.72
None
Quilgo Test ID *
This question is filled automatically 🖐 DO NOT EDIT OR REMOVE
Your answer

Submit

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