

Passage

```
function main()
{
    integer a=5, b=7
    switch(a)
    {
        case 5: print "I am 5"
        break
        case b: print "I am not 5"
        break
        default: print "I am different"
    }
}
```



Choose the correct answer:
A pseudo-code is used which is self explanatory.

Question

What will be the output generated when the given code is executed?

- I am 5
- I am not 5
- I am different
- This code will generate an error



Choose the correct answer.

Question

Which of the following statements is TRUE about a breadth first search?

- Beginning from a node, all the adjacent nodes are traversed first
- Beginning from a node, each adjacent node is fully explored before traversing the next adjacent node
- Beginning from a node, the nodes are traversed in cyclic order
- None of the above



Choose the correct answer.

Question

What will the output of the following pseudocode statements be?

(Note: Assume that when two data types are processed through an operator, the answer maintains the same data type as that of the input. Also, all data types have enough range to accommodate any number. If two different data types are operated upon, the result assumes the data type that is more expressive.)

```
integer a = 456, b, c, d =10
b = a/d
c = a - b
print c
```

- 410
- 410.4
- 411.4
- 411



Choose the correct answer.

Question

What is implied by the argument of a function?

- The variables passed to the function when it is called
- The value that the function returns on execution
- The execution code inside the function
- Return type of the function



Fill in the blank

Question

Null function is also known as _____.

- Anonymous Function
- Generic Function
- Void Function
- Null Operator



Choose the correct answer.

Question

Which of the following implies that there are two loops that are nested?

- Two loops, one after the other
- Two loops, one inside the other
- One loop with two different iteration counts
- Two loops with the same iteration count



Choose the correct answer.

Question

In an implementation of a linked list, each node contains data and address. Which of the following can the address field possibly contain?

- Address of the next node in sequence
- Its own address
- Address of the last node
- Address of the first node

Passage

```
class rocket
{
private:
integer height, weight
public: // Statement 1
function input( int a, int b )
{
    height = a;
    weight = b;
}
}

function main()
{
    rocket rocket1, rocket2
}
```



Choose the correct answer.

Question

Refer to the pseudocode given in the 'Passage'. The code is similar to that in C++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements `objectname.functionname` and `objectname.datamembername`, respectively. What can be inferred from this code?

- "rocket" is a class with "rocket1" and "rocket2" as its objects, with "height" and "weight" as its attributes.
- "rocket" is a class with "rocket1" and "rocket2" as its objects, with "height" and "weight" as its objects.
- "rocket" is a class with "rocket1", "rocket2", "height" and "weight" as its attributes.
- "rocket" is a class with "rocket1", "rocket2", "height" and "weight" as its objects.

 Choose the correct answer.

Question

The program to print the larger of the two numbers entered by a user is given below. Which of the following should be substituted in place of "???" in Statement 1 of the code to get the desired output?

```
int number1, number 2
input number1, number 2
if (???) // Statement 1
print number1
else
print number2
end if
```

- number1>number2
- number2>number1
- number2 equals number1
- number1<= number2



Choose the correct answer.

Question

Which of the following statements is TRUE about a variable?

- A variable cannot be used before it is declared.
- A variable cannot be used after it is declared.
- A variable cannot be used in the function it is declared in.
- A variable can always be used.



Choose the correct answer

Question

Which of the following structures is/are responsible for storing data in case of interrupts?

1. Linked List
2. Stack
3. Queue

Only 1

Only 2

Only 3

Both 1 and 2

Both 2 and 3



Choose the correct answer.

Question

Which of the following refers to data hiding in object-oriented programming?

- A class does not have functions as private members.
- A class has both data and functions in the data in the class.
- Data in the private and protected area of a class is not directly accessible and can only be accessed through member functions in the public area of class.
- A single class can have many objects.

 Choose the correct answer.

Question

The function given below computes the factorial of the number "n" entered by a user. What should be the "MISSING STATEMENT" in order to make the code work properly?

```
function factorial(n)
{
    if (n equals 1)
        return 1
    else
-- MISSING STATEMENT --
    end
}
```

- return factorial(n-1)
- return n*factorial(n)
- return n*(n-1)
- return n*factorial(n-1)

Passage

```
function modify(a,b)
{
    integer c, d = 2
    c = a*d + b
    return c
}

function calculate()
{
    integer a = 5, b = 20, c
    integer d = 10
    c = modify(a, b);
    c = c + d
    print c
}
```

 Choose the correct answer.

Question

Consider the code given in the 'Passage'. Assume that "a" and "b" are passed by value. What will the output of the program be when the function `calculate()` is executed?

- 80
- 40
- 32
- 72

 Choose the correct answer.

Question

A football seller stores all the footballs in a large container that is closed from the bottom. The footballs are stacked on top of each other in the box. The new supply of balls is put in the box from the top. When a customer buys a football, the one at the top of the stack is given to the customer. Each football has a code. The seller wants to store the codes of all the footballs in a data structure to keep track of the inventory. Which data structure should be used for this purpose?

- Queue
- Stack
- Array
- Graph

 Choose the correct answer

Question

Ritika was asked to include concrete objects in her project. Which of the following statements clearly states about the concrete objects?

- All the objects created as the instance of a class
- Objects created using the new keyword
- Variables and objects that follow the concrete keyword
- Objects created under conditional statements

 Choose the correct answer.

Question

Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same address by using the key. What is this search mechanism?

- Linear search
- Binary search
- Hash coded search
- None of the above

 Choose the correct answer.

Question

In a linear list of elements, a deletion can be made from one end (front) and an insertion can be made at the other end (rear). What is this linear list known as?

- Queue
- Stack
- Tree
- Branch



Choose the correct answer.

Question

How many nodes does a complete binary tree with 5 levels have, if the root is considered to be at level 1?

- 15
- 25
- 63
- 31



Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.

Passage

Pragya sells footballs. She has a large container to store footballs which is closed from below. Footballs are piled one on top of the other in the box. When new balls are supplied, Pragya puts the balls in the box from the top. When a customer buys a ball, she delivers the ball at the top of the pile to the customer. Each ball has a code. She wants to store the ball codes in a data structure to keep track of her inventory. What data-structure should she use?



Choose the correct answer

- ### Question
- Queue
 - Stack
 - Array
 - Graph

Passage

For solving a problem, which of these is the first step in developing a working program for it?

 Choose the correct answer

Question

- Writing the program in the programming language
- Writing a step-by-step algorithm to solve the problem.
- Compiling the libraries required.
- Code debugging



Choose the correct answer.

Question

What is the first step for developing a working program to solve a problem?

- To write the program in the programming language
- To write a step-by-step algorithm to solve the problem
- To compile the required libraries
- To debug the code



Choose the correct answer.

Question

Two programmers independently write a program to find the mass of one mole of water, that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:
`integer hydrogen, oxygen, water // Code A`

The second programmer defines three quantities as:
`integer a, b, c // Code B`

Which of the two is a better programming practice and why?

- Code B is better because variable names are shorter.
- Code A is better because the variable names are understandable and non-confusing.
- Code A would run correctly while Code B would give an error.
- Code B would run correctly while Code A would give an error.

Passage

```
enum names {AMAR,AKBAR,ANTHONY}
function main()
{
print AMAR
print AKBAR
print ANTHONY
}
```



Choose the correct answer.
A pseudo-code is used which is self explanatory.

Question

What will be the output generated when the given code is executed?

- 000
- 012
- 123
- 111



Choose the correct answer.

Question

In which of the following methods is sorting NOT possible?

- Insertion
- Selection
- Exchange
- Deletion



Choose the correct answer.

Question

A sorting algorithm traverses through a list, comparing adjacent elements and switching them under certain conditions. What is this sorting algorithm called?

- Insertion sort
- Heap sort
- Quick sort
- Bubble sort



Choose the correct answer.

Question

In which of the following areas of a class are data and functions directly accessible outside the class?

Public

- Private
- Protected
- None of the above



Choose the correct answer.

Question

A programmer writes a program to find an element in the array A[5] with the elements: 8 30 40 45 70. The program is run to find a number "X", that is found in the first iteration of binary search. What is the value of "X"?

40

- 8
- 70
- 30

A stack is implemented as a linear array A[0...N-1]. A programmer writes the function given below to pop out an element from the stack.

```
function POP( top, N )
{
    if (X)
    {
        top = top - 1
    }
    else
    {
        print "Underflow"
    }
    return top
}
```

Which of the following should substitute the condition "X"?

- top<N-1
- top<N
- top>1
- top>= 0

Passage

```
class brush
{
private:
integer size, c

rcode
function getdata( ) { ... } // Statement 1
public:
integer name // Statement 2
function putdata( ) { ... }
}

function main
{
brush b1, b2
print b1.name // Statement 3
b2.getdata() // Statement 4
}
```



Choose the correct answer.

Question

Refer to the pseudocode given in the 'Passage'. The code is similar to that in C++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements `objectname.functionname` and `objectname.datamembername`, respectively. Which statement should be deleted from the code to rectify the error in it?

- Statement 1
- Statement 2
- Statement 3
- Statement 4



Choose the correct answer.

Question

For which of the following is the stack implementation useful?

- Radix search
- Breadth first search
- Recursion
- None of the above

What is the output of the program given below?

```
integer i = 0, j
while (i<2)
{
    j = 0;
    while (j<= 3*i)
    {
        print j
        print blank space
        j = j + 3
    }
    print end-of-line //takes the cursor to the next line
    i = i + 1
}
```

0
0 3

0 3
0 3 6

0
0 3 6
0 3 6 9

0 3 6
0 3 6 9
0 3 6 9 12



Choose the correct answer.

Question

Which of the following implies that there are two loops that are nested?

- Two loops, one after the other
- Two loops, one inside the other
- One loop with two different iteration counts
- Two loops with the same iteration count

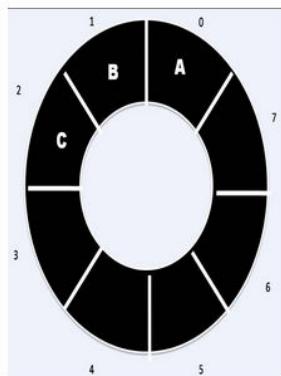
 Choose the correct answer.

Question

In an implementation of a linked list, each node contains data and address. Which of the following can the address field possibly contain?

- Address of the next node in sequence
- Its own address
- Address of the last node
- Address of the first node

Passage



 Choose the correct answer

Question

What will be the values of FRONT and REAR respectively if the following operations take place on the queue shown in the given figure -

1. REMOVE A
2. REMOVE B
3. REMOVE C

- 3,2
- 0,0
- 0,2
- 1,-1

 Choose the correct answer.

Question

What will happen if some indentations are made in some statements of a code written in C++?

- Faster execution of the code
- Lower memory requirement for the code
- Correction of errors in the code
- Better readability of the code



Choose the correct answer.

Question

In which of the following situations can a constructor be invoked?

- When an object is created
- When an object is assigned the value 0
- Only at the end of the code
- When the scope of the object is over



Choose the correct answer.

Question

Which of the following can be inherited by a derived class from a base class?

- Data members
- Member functions
- Constructors and destructors
- Data members and member functions



Choose the correct answer

Question

In Object Oriented Programming, there should never be more than one reason for a class to change. There should be only one reason for the existence of the class. Which of the following principles states the same?

- Unique responsibility reason
- Single reason principle
- Single responsibility principle
- Unique reason principle

Passage

Srujan writes a sorting algorithm. The algorithm takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?



Choose the correct answer

Question

- All numbers in one list are more than 100, while in the other are less than 100.
- The ordering of numbers with respect to magnitude in the two lists has different properties.
- One list has all negative numbers, while the other has all positive numbers.
- One list contains 0 as an element, while the other does not.

 Choose the correct option.

Question

Which of the following statements is/are true about optical fibres?

1. Optical fibre transports signal on the basis of total internal reflection principle.
2. Refractive index of core should be less than that of cladding.
3. Every beam which strikes the interface of core and cladding is reflected back.

- TFF
- TTT
- TFT
- FFF

Passage

Vijay wants to print the following pattern on the screen:

```
1  
12  
123
```

He writes the following program:

```
integer i = 1 // statement 1
while ( i <= 3 )
{
    int j // Statement 2
    while ( j <= i ) // Statement 3
    {
        print j
        print blank space
        j = j + 1 // Statement 4
    }
    print end-of-line //takes the cursor to the next line
    i = i + 1
}
```

 Choose the correct answer

Question

- Statement 1
- Statement 2
- Statement 3
- Statement 4
- Program does not have error

Passage

Abhinav wants to find the largest number in a given list of 20 numbers. Which of the following options is an efficient approach to do this?

 Choose the correct answer

Question

- Use bubble sort to sort the list in descending order and then print the first number of the series.
- Use selection sort to sort the list in descending order and then print the first number of the series.
- Implement one iteration of selection sort for descending order and print the first number in the series.
- None of these

Passage

What is implied by the argument of a function?

 Choose the correct answer

Question

The variables passed to it when it is called

The value it returns on execution

The execution code inside it

Its return type

Passage

There are two loops which are nested. This implies which one of the following?

 Choose the correct answer

Question

Two loops, one after the other

Two loops, one inside the other

One loop with two different iteration counts

Two loops with the same iteration count

Passage

Mary is making a database of animals in a zoo and their properties. The possible animals are dog, lion and zebra. Each one has as attributes isHerbivorous, colour and isNocturnal. She uses the object oriented programming paradigm for this. How will she conceptualize the system?

 Choose the correct answer

Question

class: Animal; objects: dog, lion and zebra; data members: isHerbivorous, colour and isNocturnal

class: Animal; objects: isHerbivorous, colour and isNocturnal; data members: dog, lion and zebra

classes: dog, lion and zebra; objects: Animal; data members: isHerbivorous, colour and isNocturnal

None of these

Passage

What is space complexity of a program?

 Choose the correct answer

Question

- Amount of hard-disk space required to store the program
- Amount of hard-disk space required to compile the program
- Amount of memory required by the program to run
- Amount of memory required for the program to compile

Passage

```
function MyFunc1( integer n )
{
    return n*2
}

function MyFunc2( integer n )
{
    print "The value is " n
}
```

 Choose the correct answer:
A pseudo-code is used which is self explanatory.

Question

Which of the given two functions can be categorized as procedure?

- MyFunc1
- MyFunc2
- Both MyFunc1 and MyFunc2
- A function cannot be a procedure

Passage

Zenab and Shashi independently write a program to find the mass of one mole of water, which includes mass of hydrogen and oxygen. Zenab defines the variables:
integer hydrogen, oxygen, water // Code A
while Shashi defines the three quantities as:
integer a, b, c // Code B

Which is a better programming practice and why?

 Choose the correct answer

Question

- Code B is better because variable names are shorter
- Code A is better because the variable names are understandable and non-confusing
- Code A will run correctly, while Code B will give an error.
- Code B will run correctly, while Code A will give an error.

Passage

A derived class may inherit from the base class which of the following? (Consider assumptions as in C++)

 Choose the correct answer

Question

- Data members
- Member functions
- Constructors and destructors
- Both data members and member functions

Passage

A queue is implemented as a (singly linked) linked-list. Each node has an element and pointer to another node. *Rear* and *Front* contain the addresses of the rear and front node respectively. If the condition (*rear* \neq *front*) is true and neither is NULL, what do we infer about the linked list?

 Choose the correct answer

Question

- It has no elements
- It has one element
- There is an error
- None of these

Passage

Saloni writes the code for a function that takes as input *n*, an even integer and calculates the sum of first *n* even natural numbers.

```
function sum( n )  
{  
    if(n equals 2)  
        return 2  
    else  
        return (n + sum(n-2))  
    end  
}
```

She then calls the function by the statement, sum(30). How many times will the function sum be called to compute this sum?

 Choose the correct answer

Question

- 1
- 30
- 15
- 16

Passage

What is implied by the argument of a function?

 Choose the correct answer

Question

- The variables passed to it when it is called
- The value it returns on execution
- The execution code inside it
- Its return type

Passage

For solving a problem, which of these is the first step in developing a working program for it?

 Choose the correct answer

Question

- Writing the program in the programming language
- Writing a step-by-step algorithm to solve the problem.
- Compiling the libraries required.
- Code debugging

Passage

integer a = 40, b = 35, c = 20, d = 10

Comment about the output of the following two statements:

```
print a * b / c - d  
print a * b / (c - d)
```



Choose the correct answer:

Assume the following precedence (high to low). Operators in the same row have the same precedence:

(.)
* /
+ -
AND
OR

For operators with equal precedence, the precedence is from left-to-right in expression.

Question

Differ by 80

Same

Differ by 50

Differ by 160

Passage

As part of the maintenance work, you are entrusted with the work of rearranging the library books in a shelf in proper order, at the end of each day. The ideal choice will be



Choose the correct answer

Question

Bubble Sort

Insertion Sort

Selection Sort

Heap Sort

 Choose the correct option.

Question

Which one of the following is not a Program control instruction?

- JMP
- CALL
- RET
- INC

 Choose the correct option.

Question

For a relation R(A,B,C,D,E,F), given are functional dependencies on R.

1. A → B
2. C → D
3. DB → F
4. F → C

Which of the following functional dependencies is not true for R?

- DA → F
- C → B
- AF → DB
- F → D

Passage

```
integer num1,num2  
input num1,num2  
integer k=0,final=num1  
//missing statements  
print final
```



Choose the correct answer.
A pseudo-code is used which is self explanatory.
// in pseudo code refers to comment

Question

Reema wanted to multiply two numbers but the * key of her keyboard is broken. She decides to write the program without using * operator. She writes the given code, where some statements are missing.

What should be the missing statements in the given code?

- while(k++ < num1)
 final+=num1
- while(k++ < num2-1)
 final+=num1
- while(k++ < =num2)
 final+=num1
- while(k++ < num2)
 final+=num2

Passage

```
function modify(y,z)  
{  
    y = y + 1;  
    z = z + 1;  
    return y - z  
}  
  
function calculate()  
{  
    integer a = 5, b = 10, c;  
    c = modify(a, b);  
    print a  
    print space  
    print c  
}
```



Choose the correct answer.

Question

Consider the code given in the 'Passage'. Assume that "a" and "b" are passed by value. What will the output of the program be when the function *calculate()* is executed?

- 11/05/15
- 10/05/15
- 06/05/15
- 05/05/15

Question

A programmer wants the program given below to print the largest number out of three numbers entered by the user.

```
int number1, number 2, number3, temp;  
input number1, number2, number3;  
  
if (number1>number2)  
temp = number1  
else  
temp = number2  
end if  
  
if (??) // Statement 1  
temp = number3  
end if  
print temp
```

Which of the following should be substituted in place of "???" in Statement 1 in the code?

- number3>number2
- number3>temp
- number3<temp
- number3>number1



Choose the correct answer.

Question

Which of the following is NOT a data type?

- Integer
- Character
- Boolean
- Array



Choose the correct answer

Question

Nalanda wants to implement Virtual Functions. Which of the following options will she have to follow in order to bring out the same?

- Dynamic Dispatching
- Static Dispatching
- Static Binding
- Anonymous Class



Choose the correct answer.

Question

How can the largest number in a list of twenty numbers be found?

- Use bubble sort to sort the list in a descending order and then print the first number of the series
- Use selection sort to sort the list in a descending order and then print the first number of the series
- Implement one iteration of selection sort for descending order and print the first number in the series
- None of the above

 Choose the correct answer.

Question

What is the minimum number of stacks of size "n" required to implement a queue of size "n"?

- 1
- 2
- 3
- 4

 Choose the correct answer

Question

Preeti writes a program in a low level language, now she wants to translate it into a higher language without rewriting the program. What another program she must use for this purpose?

- Compiler
- Decompiler
- Interpreter
- Executer
- Cross Compiler

Question

Assume the following precedence (high to low). Operators in the same row have the same precedence.

(.)
* /
+ -
AND
OR

The precedence is from left to right for the operators with equal precedence.

What will be the output of the following code statements?

```
integer a = 50, b = 25, c = 5
print a * b / c + c
```

- 120
- 125
- 255
- 250

 Choose the correct answer.

Question

A programmer writes a program to find an element in the array A[5] with the elements: 8 30 40 45 70. The program is run to find a number "X", that is found in the first iteration of binary search. What is the value of "X"?

40

8

70

30



Choose the correct answer.

Question

How many nodes does a full binary tree with " n " non-leaf nodes contain?

$\log n$

$n + 1$

$2n + 1$

$2n$



Choose the correct answer.

Question

A programmer tries to debug a code of 10,000 lines. It is known that there is a logical error in the first 25 lines of the code. Which of the following is an efficient way to debug the code?

Compile the entire code and check it line by line.

Use an interpreter on the first 25 lines of code.

Compile the entire code and run it.

None of the above can be used to debug the code.

Passage

```
function main()
{
    integer i = 0.7
    static float m = 0.7
    if( m equals i )
        print "We are Equal"
    else if( m > i )
        print "I am Greater"
    else
        print "I am Lesser"
}
```



Choose the correct answer.
A pseudo-code is used which is self explanatory.

Question

What will be the output of the given code?

- We are Equal
- I am Greater
- I am Lesser
- This code will generate an error



Choose the correct answer.

Question

Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

- Run time is always more than the compile time.
- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.



Choose the correct answer.

Question

An integer "X" is saved as an unsigned 8-bit number 00001011. What is X?

- 22
- 11
- 10
- None of the above

Passage

A full binary tree with n non-leaf nodes contains

 Choose the correct answer

Question

- $(\log n)$ nodes
- $n + 1$ nodes
- $2n + 1$ nodes
- $2n$ nodes

Passage

Ravi is writing a program in C++. C++ uses the 'for' keyword for loops. Due to distraction, Ravi writes 'gor' instead of 'for'. What will this result to?

 Choose the correct answer

Question

- The code will not compile
- The code will give an error while in execution
- The code may work for some inputs and not for others.
- It will create no problems.

 Choose the correct answer.

Question

Which of the following sorting algorithms yields approximately the same worst-case and average-case running time behavior in $O(n \log n)$?

- Bubble sort and Selection sort
- Heap sort and Merge sort
- Quick sort and Radix sort
- Tree sort and Median-of-3 Quick sort



Choose the correct answer.

Question

In which of the following methods is sorting NOT possible?

- Insertion
- Selection
- Exchange
- Deletion

Passage

```
class brush
{
private:
integer size, c

rcode
function getdata( ) { ... } // Statement 1
public:
integer name // Statement 2
function putdata( ) { ... }
}

function main
{
brush b1, b2
print b1.name // Statement 3
b2.getdata() //Statement 4
}
```



Choose the correct answer.

Question

Refer to the pseudocode given in the 'Passage'. The code is similar to that in C++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements `objectname.functionname` and `objectname.datamembername`, respectively. Which statement should be deleted from the code to rectify the error in it?

- Statement 1
- Statement 2
- Statement 3
- Statement 4

 Choose the correct answer.

Question

The program to print the sum of all cubes that lie between 0 and 100 is given below. Does this program have an error? If yes, which statement should be modified to correct the program?

```
integer i = 0, a // Statement 1
integer sum = 0;
a = (i * i * i)
while (i<100) // Statement 2
{
    sum = sum + a // Statement 3
    i = i + 1
    a = (i * i * i) // Statement 4
}
print sum
```

- Statement 1
- Statement 2
- Statement 3
- Statement 4
- No error

 Choose the correct answer.

Question

Which of the following data structures may produce an overflow error even though the current number of elements in it is lower than its size?

- A queue implemented in a linear array
- A queue implemented in a circularly connected array
- A stack implemented in a linear array
- None of the above

 Choose the correct answer

Question

Function main is the starting point of execution of a program. Which of the following options shall help in making an executable program without the use of main function in the program?

- Any function can be made and marked as starting point using a language dependent syntax
- Two macros can be used. One to hold the name of a function and its working and the other to call the first macro
- Any program without a main function shall not do anything but can only produce a blank screen
- It is not possible to run a program without a main function in a program



Choose the correct answer.

Question

A function in the base class is redefined in the inherited class. What is the term used to describe this situation?

- Inheritance
- Overriding
- Overloading
- Encapsulation



Choose the correct answer.

Question

The function given below takes a number "n" as the input and calculates the sum of first "n" natural numbers. Which of the following statements should be inserted in place of "???" to get the required output?

```
function sum(n)
{
    if (??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

- n equals 1
- n equals 2
- n>= 1
- n>1

 Choose the correct option.

Question

Which of the following algorithms is called the shortest-remaining-time-first scheduling?

- Preemptive shortest job first(SJF) scheduling
- Non-preemptive shortest job first(SJF) scheduling
- Priority scheduling
- Round robin scheduling

 Choose the correct option.

Question

Which of the following options is not a necessary condition for Deadlock to occur?

- Mutual exclusion
- Hold and wait
- No preemption
- Circular wait
- None of these



Choose the correct answer.

Question

What will happen if some indentations are made in some statements of a code written in C++?

- Faster execution of the code
- Lower memory requirement for the code
- Correction of errors in the code
- Better readability of the code

Passage

```
function modify(a,b)
{
    integer c, d = 2
    c = a*d + b
    return c
}

function calculate()
{
    integer a = 5, b = 20, c
    integer d = 10
    c = modify(a, b);
    c = c + d
    print c
}
```



Choose the correct answer.

Question

Consider the code given in the 'Passage'. Assume that "a" and "b" are passed by value. What will the output of the program be when the function *calculate()* is executed?

- 80
- 40
- 32
- 72



Choose the correct answer

Question

Trisha wants to use a data structure in which the cost of deleting, adding and traversing its elements is the same and constant. Which of the following data structures should she use?

- B-Tree
- AVL Tree
- Queue
- Stack



i Choose the correct answer.

Question

The program to print the larger of the two numbers entered by a user is given below. Which of the following should be substituted in place of "???" in Statement 1 of the code to get the desired output?

```
int number1, number 2
input number1, number 2
if (???) // Statement 1
print number1
else
print number2
end if
```

- number1>number2
- number2>number1
- number2 equals number1
- number1<= number2

Passage

```
integer i,k,j,n =5
for i=n to 1 decrement 1
{
    for j=n to i+1 decrement 1
    {
        print blank space
    }
    for k=1 to ((2*i)-1) increment 1
    {
        print ***
    }
    print end-of-line //takes the cursor to the next line
}
```

i Choose the correct answer:

A pseudo-code is used which is self explanatory.
// in pseudo code refers to comment

Question

What will be the output when the given code is executed?

- ****
- ***
- **
- *
- *****
- ****
- ***
- **
- *

*

**

*

 Choose the correct answer

Question

Consider the given conditions in regards to binary search performed on an array named *MyArray* -

1. *Beg > End*
2. *Beg ≤ End*
3. *MyArray[mid] != item_to_be_searched*

Which of the given conditions forms the termination condition of an iterative binary search function when the variables *Beg*, *End* and *mid* have their usual meanings?

Only 1

Only 2

Only 3

Both 2 and 3

All 1, 2 and 3

 Choose the correct answer.

Question

Assume the following precedence (high to low). Operators in the same row have the same precedence.

(.)

*

/

+

-

AND

OR

The precedence is from left to right in the expression for the operators with equal precedence.

Which of the following statements is TRUE about the output of the code statements given below?

```
integer a = 40, b = 35, c = 20, d = 10
print a * b / c - d
print a * b / (c - d)
```

The outputs differ by 80.

The outputs are the same.

The outputs differ by 50.

The outputs differ by 160.

Passage

```
function modify(y,z)
{
    y = y + 1;
    z = z + 1;
    return y - z
}

function calculate()
{
    integer a = 5, b = 10, c
    c = modify(a, b);
    print a
    print space
    print c
}
```



Choose the correct answer.

Question

Consider the code given in the 'Passage'. Assume that "a" and "b" are passed by value. What will the output of the program be when the function `calculate()` is executed?

- 11/05/15
- 10/05/15
- 06/05/15
- 05/05/15



Choose the correct answer

Question

How many nodes in a tree with n nodes have no ancestors?

- 0
- 1
- 2
- $\log n$

Question

A programmer wants the program given below to print the largest number out of three numbers entered by the user.

```
int number1, number2, number3, temp;  
input number1, number2, number3;  
  
if (number1>number2)  
temp = number1  
else  
    temp = number2  
end if  
  
if (??) // Statement 1  
temp = number3  
end if  
print temp
```

Which of the following should be substituted in place of "???" in Statement 1 in the code?

- number3>number2
- number3>temp
- number3<temp
- number3>number1

Question

A sorting mechanism uses the binary tree concept such that any number in the tree is larger than all the numbers in the sub-tree below it. What is this method called?

- Selection sort
- Insertion sort
- Heap sort
- Quick sort



Choose the correct answer.

Question

Which of the following implies that there are two loops that are nested?

- Two loops, one after the other
- Two loops, one inside the other
- One loop with two different iteration counts
- Two loops with the same iteration count



Choose the correct answer.

Question

Which of the following can be inherited by a derived class from a base class?

- Data members
- Member functions
- Constructors and destructors
- Data members and member functions



Choose the correct answer

Question

Which of the given function prototypes can be considered to be overloaded(no ambiguity)?

- A. function myFunc(integer Num, float me) // does not return anything
- B. function myFunc(integer Num, double me) // does not return anything
- C. function myFunc(character Num, float me) // does not return anything
- D. function myFunc(integer Num, float me) // returns an integer

- A and B
- A, B and C
- A, C and D
- B, C and D
- Both 2 and 4



Choose the correct answer.

Question

Which of the following describes a tree?

- An unconnected graph
- A connected graph
- A connected acyclic graph
- A complete graph



Choose the correct answer.

Question

How many nodes does a full binary tree with " n " non-leaf nodes contain?

- $\log n$
- $n + 1$
- $2n + 1$
- $2n$



Choose the correct answer.

Question

What is the minimum number of stacks of size "n" required to implement a queue of size "n"?

1

2

3

4



Choose the correct answer

Question

Which of the following options is an exception to being a part of composite data types?

Union

Array

Structure

Stack



Choose the correct answer.

Question

Two programmers independently write a program to find the mass of one mole of water, that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:

```
integer hydrogen, oxygen, water // Code A
```

The second programmer defines three quantities as:

```
integer a, b, c // Code B
```

Which of the two is a better programming practice and why?

- Code B is better because variable names are shorter.
- Code A is better because the variable names are understandable and non-confusing.
- Code A would run correctly while Code B would give an error.
- Code B would run correctly while Code A would give an error.



Choose the correct answer.

Question

X and Y are asked to write a program to sum the rows of a 2X2 matrix stored in an array A.

X writes the code (Code A) as follows:

```
for n = 0 to 1  
    sumRow1[n] = A[n][1] + A[n][2]  
end
```

Y writes the code (Code B) as follows:

```
sumRow1[0] = A[0][1] + A[0][2]  
sumRow1[1] = A[1][1] + A[1][2]
```

Which of the following statements is correct about these codes if no loop unrolling is done by the compiler?

- Code A would execute faster than Code B.
- Code B would execute faster than Code A.
- Code A is logically incorrect.
- Code B is logically incorrect.



Choose the correct answer.

Question

Which of the following abstract data types can be used to represent a many-to-many relation?

- Tree
- Stack
- Graph
- Queue



Choose the correct answer.

Question

For which of the following purposes is the construct given below used?

if (condition) then A else B

- Decision-making
- Iteration
- Recursion
- Object-oriented programming



Choose the correct answer.

Question

A librarian has to rearrange the library books on a shelf in a proper order at the end of each day. Which of the following sorting techniques should be the librarian's ideal choice?

- Bubble sort
- Insertion sort
- Selection sort
- Heap sort



Choose the correct answer

Question

Which of the following sorting techniques has the worst case functioning time less than O(n*n)?

- Heap Sort
- Quick Sort
- Insertion Sort
- Selection Sort



Passage

Stack is useful for implementing



Choose the correct answer

Question

- Radix Search
- Breadth First Search
- Recursion
- None of these



Choose the correct answer

Question

What is the term given to the variable whose scope is beyond all the scopes i.e., it can be accessed by all the scopes?

- Universal Variable
- Global Variable
- External Variable
- Auto Variable
- Both 2 and 3



Choose the correct answer

Question

Yashi wants to implement priority queues using arrays. What is the minimum number of arrays that she should use to serve the purpose?

- 1
- 2
- 3
- 4

Passage

For solving a problem, which of these is the first step in developing a working program for it?

 Choose the correct answer

Question

- Writing the program in the programming language
- Writing a step-by-step algorithm to solve the problem.
- Compiling the libraries required.
- Code debugging

Passage

How can a call to an overloaded function be ambiguous?

 Choose the correct answer

Question

- By misspelling the name
- There might be two or more functions with the same name
- There might be two or more functions with equally appropriate signatures
- None of these

Passage

While calculating time complexity of an algorithm, the designer concerns himself/herself primarily with the run time and not the compile time. Why?

 Choose the correct answer

Question

- Run time is always more than compile time.
- Compile time is always more than run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.



Choose the correct answer

Question

Which of the following options is an exception to being a part of composite data types?

- Union
- Array
- Structure
- Stack

 Choose the correct answer

Question

Which of the following options is both necessary and sufficient condition for performing Binary Search?

- Array must be sorted, direct access to the middle element should be provided
- Array should be in ascending order
- Direct access to the middle element must be provided
- Array should be sorted

 Choose the correct answer

Question

Which of the following statements is not true in the context of anonymous Union data type?

- It is a Union that does not have any name
- It is not followed by a declarator
- It defines an unnamed object
- It defines a data type



Choose the correct answer.

Question

Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

- Run time is always more than the compile time.
- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.



Choose the correct answer.

Question

Two programmers independently write a program to find the mass of one mole of water, that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:
integer hydrogen, oxygen, water // Code A

The second programmer defines three quantities as:
integer a, b, c // Code B

Which of the two is a better programming practice and why?

- Code B is better because variable names are shorter.
- Code A is better because the variable names are understandable and non-confusing.
- Code A would run correctly while Code B would give an error.
- Code B would run correctly while Code A would give an error.

 Choose the correct answer

Question

Parthiv has included several classes and their objects in his project. Now he wants to use something that will hold all these objects(of different classes). Which of the following options provides him with the best alternate?

- Store them in database
- Final Class
- Generic Class
- Anonymous Class

 Choose the correct answer.

Question

In a linear list of elements, a deletion can be made from one end (front) and an insertion can be made at the other end (rear). What is this linear list known as?

- Queue
- Stack
- Tree
- Branch



Choose the correct answer.

Question

What is the first step for developing a working program to solve a problem?

- To write the program in the programming language
- To write a step-by-step algorithm to solve the problem
- To compile the required libraries
- To debug the code



Choose the correct answer.

Question

Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same address by using the key. What is this search mechanism?

- Linear search
- Binary search
- Hash coded search
- None of the above



Choose the correct answer.

Question

How many nodes does a complete binary tree with 5 levels have, if the root is considered to be at level 1?

- 15
- 25
- 63
- 31

Passage

```
union MyUnion
{
    structure MyStructure
    {
        integer m
        float n
        character o
    }MyStr
    integer p
}MyUn
```



Choose the correct answer.

A pseudo-code is used which is self explanatory.

Question

Given that the size of integer is 2 units, float is 4 units and character is 1 unit, what will be the amount of memory occupied by the *MyUn* object?

- 2 units
- 6 units
- 7 units
- 9 units



Choose the correct answer.

Question

A problem to be solved is broken into a sequence of smaller sub-problems until a stage where the sub-problem can be easily solved. What is this design approach called?

Top-Down approach

Bottom-Up approach

Procedural programming

None of the above



Choose the correct answer.

Question

In which of the following methods is sorting NOT possible?

Insertion

Selection

Exchange

Deletion



Choose the correct answer.

Question

Which of the following gives the maximum number of nodes at level "l" of a binary tree?

(**Note:** The root is at level 1.)

2^{l-1}

3^{l-1}

2^l

$2^l - 1$

 Choose the correct answer.

Question

The function given below takes a number "n" as the input and calculates the sum of first "n" natural numbers. Which of the following statements should be inserted in place of "???" to get the required output?

```
function sum(n)
{
    if (??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

- n equals 1
- n equals 2
- n>= 1
- n>1

 Choose the correct answer.

Question

What is implied by the argument of a function?

- The variables passed to the function when it is called
- The value that the function returns on execution
- The execution code inside the function
- Return type of the function

 Choose the correct answer.

Question

Which of the following implies that there are two loops that are nested?

- Two loops, one after the other
- Two loops, one inside the other
- One loop with two different iteration counts
- Two loops with the same iteration count

Passage

```
function MyBinarySearch(array arr, integer low, integer high, integer item)
{
    if( low > high )
    {
        return -1
    }

    integer mid = (low + high)/2

    if( arr[mid] equals item )
    {
        return mid
    }
    else if( arr[mid] > item )
    {
        return //missing statement 1
    }
    else
    {
        return //missing statement 2
    }
}
```



Choose the correct answer.
A pseudo-code is used which is self explanatory.
// in pseudo code refers to comment

Question

Harshul uses the given code to implement Binary Search recursively. Find the statement that will replace missing statement 1 in the given code such that it works efficiently.

- MyBinarySearch(arr, low+1, mid-1, item)
- MyBinarySearch(arr, mid+1, high-1, item)
- MyBinarySearch(arr, mid+1, high, item)
- MyBinarySearch(arr, low, mid-1, item)



Choose the correct answer.

Question

In an implementation of a linked list, each node contains data and address. Which of the following can the address field possibly contain?

- Address of the next node in sequence
- Its own address
- Address of the last node
- Address of the first node



Choose the correct answer.

Question

Which of the following statements is TRUE about a variable?

- A variable cannot be used before it is declared.
- A variable cannot be used after it is declared.
- A variable cannot be used in the function it is declared in.
- A variable can always be used.

 Choose the correct answer.

Question

The program to print the larger of the two numbers entered by a user is given below. Which of the following should be substituted in place of "???" in Statement 1 of the code to get the desired output?

```
int number1, number 2
input number1, number 2
if (???) // Statement 1
print number1
else
print number2
end if
```

- number1>number2
- number2>number1
- number2 equals number1
- number1<= number2

 Choose the correct answer.

Question

In which of the following areas of a class are data and functions directly accessible outside the class?

- Public
- Private
- Protected
- None of the above

 Choose the correct answer.

Question

A programmer writes a program to find an element in the array A[5] with the elements: 8 30 40 45 70. The program is run to find a number "X", that is found in the first iteration of binary search. What is the value of "X"?

- 40
- 8
- 70
- 30

Passage

```
class brush
{
private:
    integer size, c

    rcode
    function getdata() { ... } // Statement 1
public:
    integer name // Statement 2
    function putdata() { ... }
}

function main
{
    brush b1, b2
    print b1.name // Statement 3
    b2.getdata() // Statement 4
}
```

 Choose the correct answer.

Question

Refer to the pseudocode given in the 'Passage'. The code is similar to that in C++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements `objectname.functionname` and `objectname.datamembername`, respectively. Which statement should be deleted from the code to rectify the error in it?

- Statement 1
- Statement 2
- Statement 3
- Statement 4



Choose the correct answer.

Question

How can a call to an overloaded function be ambiguous?

- The name of the function might have been misspelled
- There might be two or more functions with the same name
- There might be two or more functions with equally appropriate signatures
- None of the above

Question

The function given below takes a number "n" as the input and calculates the sum of first "n" natural numbers. Which of the following statements should be inserted in place of "???" to get the required output?

```
function sum(n)
{
    if (??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

- n equals 1
- n equals 2
- n>= 1
- n>1

Passage

```
function preordertraverse(node)
{
    print node→value
    if (Condition X)
        {preordertraverse(node→left)}
    if (Condition Y)
        {preordertraverse(node→right)}
    return
}
```

 Choose the correct answer.

Question

Consider a binary tree implementation. The root address is stored in the variable `root`. The address of a node is given in the variable `node`. The value of the node and its right and left child nodes can be accessed using the statements given below.

`node→value,`
`node→right,`
`node→left.`

A programmer writes the function given in the 'Passage' to do a preorder traversal of the tree.

What are Condition X and Condition Y?

- Condition X: `node→left` isnotequal
Condition Y: `node→right` isnotequal
- Condition X: `node→right` isnotequal
Condition Y: `node→left` isnotequal
- Condition X: `node→left` isequal
Condition Y: `node→right` isequal
- Condition X: `node→right` isequal
Condition Y: `node→left` isequal

 Choose the correct answer.

Question

What is the output of the program given below?

```
integer i = 0, j
while (i<2)
{
    j = 0;
    while (j<= 3*i)
    {
        print j
        print blank space
        j = j + 3
    }
    print end-of-line //takes the cursor to the next line
    i = i + 1
}
```

0

0 3

0 3

0 3 6

0

0 3 6

0 3 6 9

0 3 6

0 3 6 9

0 3 6 9 12



Choose the correct answer.

Question

What will happen if some indentations are made in some statements of a code written in C++?

- Faster execution of the code
- Lower memory requirement for the code
- Correction of errors in the code
- Better readability of the code

 Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.

 Choose the correct answer.

Question

An integer "X" is saved as an unsigned 8-bit number 00001011. What is X?

- 22
- 11
- 10
- None of the above



Choose the correct answer.

Question

Which of the following sorting algorithms yields approximately the same worst-case and average-case running time behavior in $O(n \log n)$?

- Bubble sort and Selection sort
- Heap sort and Merge sort
- Quick sort and Radix sort
- Tree sort and Median-of-3 Quick sort



Choose the correct answer.

Question

A programmer writes a sorting algorithm that takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

- All numbers in one list are more than 100 while in the other are less than 100.
- The ordering of numbers with respect to the magnitude in the two lists has different properties.
- One list has all negative numbers while the other has all positive numbers.
- One list contains 0 as an element while the other does not.

 Choose the correct answer.

Question

What will the output of the following pseudocode statements be?

(**Note:** Assume that when two data types are processed through an operator, the answer maintains the same data type as that of the input. Also, all data types have enough range to accommodate any number. If two different data types are operated upon, the result assumes the data type that is more expressive.)

```
integer a = 456, b, c, d =10  
b = a/d  
c = a - b  
print c
```

- 410
- 410.4
- 411.4
- 411

Question

The function given below takes a number "n" as the input and calculates the sum of first "n" natural numbers. Which of the following statements should be inserted in place of "???" to get the required output?

```
function sum(n)  
{  
    if (???)  
        return 1  
    else  
        return (n + sum(n-1))  
    end  
}
```

- n equals 1
- n equals 2
- n >= 1
- n > 1

 Choose the correct answer.

Question

In which of the following situations can a constructor be invoked?

- When an object is created
- When an object is assigned the value 0
- Only at the end of the code
- When the scope of the object is over

 Choose the correct answer.

Question

A programmer prepares a questionnaire with "true or false" type of questions. He wants to define a data type that stores the responses of the candidates for the questions. Which of the following is the most suited data type for this purpose?

- Integer
- Boolean
- Float
- Character

 Choose the correct answer.

Question

A sorting mechanism uses the binary tree concept such that any number in the tree is larger than all the numbers in the sub-tree below it. What is this method called?

- Selection sort
- Insertion sort
- Heap sort
- Quick sort

 Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.

 Choose the correct answer.

Question

A programmer writes a sorting algorithm that takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

- All numbers in one list are more than 100 while in the other are less than 100.
- The ordering of numbers with respect to the magnitude in the two lists has different properties.
- One list has all negative numbers while the other has all positive numbers.
- One list contains 0 as an element while the other does not.

Passage

```
class brush
{
private:
integer size, c

rCode
function getdata( ) { ... } // Statement 1
public:
integer name // Statement 2
function putdata( ) { ... }
}

function main
{
brush b1, b2
print b1.name // Statement 3
b2.getdata() //Statement 4
}
```

 Choose the correct answer.

Question

Refer to the pseudocode given in the 'Passage'. The code is similar to that in C++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements `objectname.functionname` and `objectname.datamembername`, respectively. Which statement should be deleted from the code to rectify the error in it?

- Statement 1
- Statement 2
- Statement 3
- Statement 4



Choose the correct answer.

Question

How many nodes does a full binary tree with "n" leaves contain?

- $2n + 1$ nodes
- $\log_2 n$ nodes
- $2n - 1$ nodes
- $2n$ nodes



Choose the correct answer.

Question

Which of the following data structures may produce an overflow error even though the current number of elements in it is lower than its size?

- A queue implemented in a linear array
- A queue implemented in a circularly connected array
- A stack implemented in a linear array
- None of the above

Question

The function given below takes a number "n" as the input and calculates the sum of first "n" natural numbers. Which of the following statements should be inserted in place of "???" to get the required output?

```
function sum(n)
{
    if (??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

n equals 1

n equals 2

n>= 1

n>1



Choose the correct answer.

Question

A programmer writes a code snippet in which a set of three lines occurs ten times in different parts of the program. What programming concept should be used to shorten the code length?

For loops

Functions

Arrays

Classes

Passage

```
class rocket
{
private:
integer height, weight
public: // Statement 1
function input( int a, int b )
{
    height = a;
    weight = b;
}
}

function main ()
{
    rocket rocket1, rocket2
}
```



Choose the correct answer.

Question

Refer to the pseudocode given in the 'Passage'. The code is similar to that in C++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements `objectname.functionname` and `objectname.datamembername`, respectively. What can be inferred from this code?

"rocket" is a class with "rocket1" and "rocket2" as its objects, with "height" and "weight" as its attributes.

"rocket" is a class with "rocket1" and "rocket2" as its objects, with "height" and "weight" as its objects.

"rocket" is a class with "rocket1", "rocket2", "height" and "weight" as its attributes.

"rocket" is a class with "rocket1", "rocket2", "height" and "weight" as its objects.



Choose the correct answer.

Question

A programmer prepares a questionnaire with "true or false" type of questions. He wants to define a data type that stores the responses of the candidates for the questions. Which of the following is the most suited data type for this purpose?

- Integer
- Boolean
- Float
- Character



Choose the correct answer.

Question

Two programmers independently write a program to find the mass of one mole of water, that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:

```
integer hydrogen, oxygen, water // Code A
```

The second programmer defines three quantities as:

```
integer a, b, c // Code B
```

Which of the two is a better programming practice and why?

- Code B is better because variable names are shorter.
- Code A is better because the variable names are understandable and non-confusing.
- Code A would run correctly while Code B would give an error.
- Code B would run correctly while Code A would give an error.



Choose the correct answer.

Question

A stack is implemented as a linear array A[0...N-1]. A programmer writes the function given below to pop out an element from the stack.

```
function POP( top, N )
{
    if (X)
    {
        top = top - 1
    }
    else
    {
        print "Underflow"
    }
    return top
}
```

Which of the following should substitute the condition "X"?

- top<N-1
- top<N
- top>1
- top>= 0



Choose the correct answer.

Question

A function in the base class is redefined in the inherited class. What is the term used to describe this situation?

- Inheritance
- Overriding
- Overloading
- Encapsulation



Choose the correct answer.

Question

In which of the following situations can a constructor be invoked?

- When an object is created

- When an object is assigned the value 0
- Only at the end of the code
- When the scope of the object is over

Passage

```
function preordertraverse(node)
{
    print node->value
    if (Condition X)
        {preordertraverse(node->left)}
    if (Condition Y)
        {preordertraverse(node->right)}
    return
}
```



Choose the correct answer.

Question

Consider a binary tree implementation. The root address is stored in the variable `root`. The address of a node is given in the variable `node`. The value of the node and its right and left child nodes can be accessed using the statements given below.

`node->value,`
`node->right,`
`node->left.`

A programmer writes the function given in the 'Passage' to do a preorder traversal of the tree.

What are Condition X and Condition Y?

- Condition X: node→left isnotequal
Condition Y: node→right isnotequal
- Condition X: node→right isnotequal
Condition Y: node→left isnotequal
- Condition X: node→left isequal
Condition Y: node→right isequal
- Condition X: node→right isequal
Condition Y: node→left isequal

 Choose the correct answer.

Question

Which of the following implies that there are two loops that are nested?

- Two loops, one after the other
- Two loops, one inside the other
- One loop with two different iteration counts
- Two loops with the same iteration count

 Choose the correct answer.

Question

A programmer prepares a questionnaire with "true or false" type of questions. He wants to define a data type that stores the responses of the candidates for the questions. Which of the following is the most suited data type for this purpose?

- Integer
- Boolean
- Float
- Character

 Choose the correct answer.

Question

A programmer wants the program given below to print the largest number out of three numbers entered by the user.

```
int number1, number2, number3, temp;  
input number1, number2, number3;  
  
if (number1>number2)  
    temp = number1  
else  
    temp = number2  
end if  
  
if (??) // Statement 1  
    temp = number3  
end if  
print temp
```

Which of the following should be substituted in place of "???" in Statement 1 in the code?

- number3>number2
- number3>temp
- number3<temp
- number3>number1

 Choose the correct answer.

Question

Which of the following statements is TRUE about a variable?

- A variable cannot be used before it is declared.
- A variable cannot be used after it is declared.
- A variable cannot be used in the function it is declared in.
- A variable can always be used.

 Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.

 Choose the correct answer.

Question

Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

- Run time is always more than the compile time.
- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.

 Choose the correct answer.

Question

A programmer writes a sorting algorithm that takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

- All numbers in one list are more than 100 while in the other are less than 100.
- The ordering of numbers with respect to the magnitude in the two lists has different properties.
- One list has all negative numbers while the other has all positive numbers.
- One list contains 0 as an element while the other does not.

 Choose the correct answer.

Question

A programmer prepares a questionnaire with "true or false" type of questions. He wants to define a data type that stores the responses of the candidates for the questions. Which of the following is the most suited data type for this purpose?

- Integer
- Boolean
- Float
- Character

 Choose the correct answer.

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- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.

Passage

```
class brush
{
private:
integer size, c

rcode
function getdata( ) { ... } // Statement 1
public:
integer name // Statement 2
function putdata( ) { ... }
}

function main
{
brush b1, b2
print b1.name // Statement 3
b2.getdata() //Statement 4
}
```

 Choose the correct answer.

Question

Refer to the pseudocode given in the 'Passage'. The code is similar to that in C++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements `objectname.functionname` and `objectname.datamembername`, respectively. Which statement should be deleted from the code to rectify the error in it?

- Statement 1
- Statement 2
- Statement 3
- Statement 4

 Choose the correct answer.

Question

Which of the following gives the maximum number of nodes at level "l" of a binary tree?
(Note: The root is at level 1.)

- 2^{l-1}
- 3^{l-1}
- 2^l
- $2^l - 1$

 Choose the correct answer.

Question

Which of the following statements is TRUE about a breadth first search?

- Beginning from a node, all the adjacent nodes are traversed first
- Beginning from a node, each adjacent node is fully explored before traversing the next adjacent node
- Beginning from a node, the nodes are traversed in cyclic order
- None of the above



Choose the correct answer.

Question

A programmer prepares a questionnaire with "true or false" type of questions. He wants to define a data type that stores the responses of the candidates for the questions. Which of the following is the most suited data type for this purpose?

- Integer
- Boolean
- Float
- Character



Choose the correct answer.

Question

Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

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- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.

 Choose the correct answer.

Question

A programmer is making a database of animals in a zoo along with their properties. The possible animals are dog, lion and zebra. Each one has attributes as herbivorous, color and nocturnal. The programmer uses the object-oriented programming paradigm for this. How will the system be conceptualized?

- class: Animal; objects: dog, lion and zebra; data members: herbivorous, color and nocturnal
- class: Animal; objects: herbivorous, color and nocturnal; data members: dog, lion and zebra
- classes: dog, lion and zebra; objects: Animal; data members: herbivorous, color and nocturnal
- None of the above

 Choose the correct answer.

Question

In an implementation of a linked list, each node contains data and address. Which of the following can the address field possibly contain?

- Address of the next node in sequence
- Its own address
- Address of the last node
- Address of the first node

 Choose the correct answer.

Question

A programmer prepares a questionnaire with "true or false" type of questions. He wants to define a data type that stores the responses of the candidates for the questions. Which of the following is the most suited data type for this purpose?

- Integer
- Boolean
- Float
- Character

 Choose the correct answer.

Question

Two programmers independently write a program to find the mass of one mole of water, that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:
`integer hydrogen, oxygen, water // Code A`

The second programmer defines three quantities as:
`integer a, b, c // Code B`

Which of the two is a better programming practice and why?

- Code B is better because variable names are shorter.
- Code A is better because the variable names are understandable and non-confusing.
- Code A would run correctly while Code B would give an error.
- Code B would run correctly while Code A would give an error.



Choose the correct answer.

Question

What is the first step for developing a working program to solve a problem?

- To write the program in the programming language
- To write a step-by-step algorithm to solve the problem
- To compile the required libraries
- To debug the code



Choose the correct answer.

Question

Which of the following algorithm design techniques is used in the quick sort algorithm?

- Dynamic programming
- Back tracking
- Divide and conquer
- Greedy search



Choose the correct answer.

Question

How can a call to an overloaded function be ambiguous?

- The name of the function might have been misspelled
- There might be two or more functions with the same name
- There might be two or more functions with equally appropriate signatures
- None of the above



Choose the correct answer.

Question

The function given below takes a number "n" as the input and calculates the sum of first "n" natural numbers. Which of the following statements should be inserted in place of "???" to get the required output?

```
function sum(n)
{
    if (??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

- n equals 1
- n equals 2
- n>= 1
- n>1

 Choose the correct answer.

Question

A programmer writes a code snippet in which a set of three lines occurs ten times in different parts of the program. What programming concept should be used to shorten the code length?

- For loops
- Functions
- Arrays
- Classes

 Choose the correct answer.

Question

In an implementation of a linked list, each node contains data and address. Which of the following can the address field possibly contain?

- Address of the next node in sequence
- Its own address
- Address of the last node
- Address of the first node



Choose the correct answer.

Question

Which of the following can be inherited by a derived class from a base class?

- Data members
- Member functions
- Constructors and destructors
- Data members and member functions



Choose the correct answer.

Question

Assume the following precedence (high to low). Operators in the same row have the same precedence.

(.)
* /
+ -
AND
OR

The precedence is from left to right in the expression for the operators with equal precedence.

Which of the following statements is TRUE about the output of the code statements given below?

```
integer a = 40, b = 35, c = 20, d = 10
print a * b / c - d
print a * b / (c - d)
```



The outputs differ by 80.

- The outputs are the same.
- The outputs differ by 50.
- The outputs differ by 160.



Choose the correct answer.

Question

Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

- Run time is always more than the compile time.
- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.



Choose the correct answer.

Question

A programmer tries to debug a code of 10,000 lines. It is known that there is a logical error in the first 25 lines of the code. Which of the following is an efficient way to debug the code?

- Compile the entire code and check it line by line.
- Use an interpreter on the first 25 lines of code.
- Compile the entire code and run it.
- None of the above can be used to debug the code.



Choose the correct answer.

Question

Which of the following statements is TRUE about a breadth first search?

- Beginning from a node, all the adjacent nodes are traversed first
- Beginning from a node, each adjacent node is fully explored before traversing the next adjacent node
- Beginning from a node, the nodes are traversed in cyclic order
- None of the above



Choose the correct answer.

Question

How can the largest number in a list of twenty numbers be found?

- Use bubble sort to sort the list in a descending order and then print the first number of the series
- Use selection sort to sort the list in a descending order and then print the first number of the series
- Implement one iteration of selection sort for descending order and print the first number in the series
- None of the above

 Choose the correct answer.

Question

What is the output of the program given below?

```
integer i = 0, j
while (i<2)
{
    j = 0;
    while (j<= 3*i)
    {
        print j
        print blank space
        j = j + 3
    }
    print end-of-line //takes the cursor to the next line
    i = i + 1
}
```

0
0 3

0 3
0 3 6

0
0 3 6
0 3 6 9

0 3 6
0 3 6 9
0 3 6 9 12

 Choose the correct answer.

Question

Assume the following precedence (high to low). Operators in the same row have the same precedence.

(.)
*/
+ -
AND
OR

The precedence is from left to right in the expression for the operators with equal precedence.

Which of the following statements is TRUE about the output of the code statements given below?

```
integer a = 40, b = 35, c = 20, d = 10
print a * b / c - d
print a * b / (c - d)
```

The outputs differ by 80.

The outputs are the same.

The outputs differ by 50.

The outputs differ by 160.



Choose the correct answer.

Question

In which of the following situations can a constructor be invoked?

When an object is created

When an object is assigned the value 0

Only at the end of the code

When the scope of the object is over



Choose the correct answer.

Question

What will happen if some indentations are made in some statements of a code written in C++?

Faster execution of the code

Lower memory requirement for the code

Correction of errors in the code

Better readability of the code



Choose the correct answer.

Question

Which of the following can be inherited by a derived class from a base class?

- Data members
- Member functions
- Constructors and destructors
- Data members and member functions



Choose the correct answer.

Question

How many nodes does a full binary tree with "n" leaves contain?

- $2n + 1$ nodes
- $\log 2n$ nodes
- $2n - 1$ nodes
- $2n$ nodes



Choose the correct answer.

Question

A sorting algorithm traverses through a list, comparing adjacent elements and switching them under certain conditions. What is this sorting algorithm called?

- Insertion sort
- Heap sort
- Quick sort
- Bubble sort

 Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.

 Choose the correct answer.

Question

Which of the following sorting algorithms yields approximately the same worst-case and average-case running time behavior in $O(n \log n)$?

- Bubble sort and Selection sort
- Heap sort and Merge sort
- Quick sort and Radix sort
- Tree sort and Median-of-3 Quick sort

 Choose the correct answer.

Question

A programmer writes a program to find an element in the array A[5] with the elements: 8 30 40 45 70. The program is run to find a number "X", that is found in the first iteration of binary search. What is the value of "X"?

40

8

70

30

 Choose the correct answer.

Question

Which of the following is the lowest level format to which the computer converts a program in a higher language before execution?

English code

Machine code

Assembly language

System language

 Choose the correct answer.

Question

What is implied by the argument of a function?

The variables passed to the function when it is called

The value that the function returns on execution

The execution code inside the function

Return type of the function



Choose the correct answer.

Question

Which of the following best describes the space complexity of a program?

- Amount of hard disk space required to store the program
- Amount of hard disk space required to compile the program
- Amount of memory required for the program to run
- Amount of memory required for the program to compile



Choose the correct answer.

Question

Which of the following sorting algorithms yields approximately the same worst-case and average-case running time behavior in $O(n \log n)$?

- Bubble sort and Selection sort
- Heap sort and Merge sort
- Quick sort and Radix sort
- Tree sort and Median-of-3 Quick sort



Choose the correct answer.

Question

For which of the following is the stack implementation useful?

- Radix search
- Breadth first search
- Recursion
- None of the above

Question

The function given below takes an even integer "n" as the input and calculates the sum of first "n" even natural numbers. The function is called by the statement "sum(30)". How many times will the function "sum" be called to compute the sum?

```
function sum(n)
{
    if (n equals 2)
        return 2
    else
        return (n + sum(n-2))
    end
}
```

- 1
- 30
- 15
- 16

Question

A developer writes the program given below to print the sum of the squares of the first five whole numbers (0...4). Is the program correct? If not, which statement should be modified to correct the program?

```
integer i = 0 // Statement 1
integer sum = 0 // Statement 2
while (i<5) // Statement 3
{
    sum = i*i // Statement 4
    i = i + 1 // Statement 5
}
print sum // statement 6
```

- No error, the program is correct
- Statement 1
- Statement 4
- Statement 6



Choose the correct answer.

Question

Assume the following precedence (high to low). Operators in the same row have the same precedence.

(.)
* /
+ -
AND
OR

The precedence is from left to right in the expression for the operators with equal precedence.

Which of the following statements is TRUE about the output of the code statements given below?

```
integer a = 40, b = 35, c = 20, d = 10
print a * b / c - d
print a * b / (c - d)
```

- The outputs differ by 80.
- The outputs are the same.
- The outputs differ by 50.
- The outputs differ by 160.



Choose the correct answer.

Question

What will happen if some indentations are made in some statements of a code written in C++?

- Faster execution of the code
- Lower memory requirement for the code
- Correction of errors in the code
- Better readability of the code



Choose the correct answer.

Question

Which of the following describes a tree?

- An unconnected graph
- A connected graph
- A connected acyclic graph
- A complete graph



Choose the correct answer.

Question

Which of the following can be inherited by a derived class from a base class?

- Data members
- Member functions
- Constructors and destructors
- Data members and member functions



Choose the correct answer.

Question

What does function overloading imply?

- Many function definitions with the same name, same arguments and different return types
- Many function definitions with the same name and different arguments
- Many function definitions with the same name and same arguments
- None of the above



Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.



Choose the correct answer.

Question

A librarian has to rearrange the library books on a shelf in a proper order at the end of each day. Which of the following sorting techniques should be the librarian's ideal choice?

- Bubble sort
- Insertion sort
- Selection sort
- Heap sort



Choose the correct answer.

Question

A programmer is making a database of animals in a zoo along with their properties. The possible animals are dog, lion and zebra. Each one has attributes as herbivorous, color and nocturnal. The programmer uses the object-oriented programming paradigm for this. How will the system be conceptualized?

- class: Animal; objects: dog, lion and zebra; data members: herbivorous, color and nocturnal
- class: Animal; objects: herbivorous, color and nocturnal; data members: dog, lion and zebra
- classes: dog, lion and zebra; objects: Animal; data members: herbivorous, color and nocturnal
- None of the above



Choose the correct answer.

Question

Which of the following implies that there are two loops that are nested?

- Two loops, one after the other
- Two loops, one inside the other
- One loop with two different iteration counts
- Two loops with the same iteration count

Passage

A destructor may be invoked in which of the following situations?

 Choose the correct answer

Question

- When the object is created
- When the object is assigned value 0.
- Only at the end of the code
- When the scope of the object is over.

Passage

What is space complexity of a program?

 Choose the correct answer

Question

- Amount of hard-disk space required to store the program
- Amount of hard-disk space required to compile the program
- Amount of memory required by the program to run
- Amount of memory required for the program to compile

Passage

While calculating time complexity of an algorithm, the designer concerns himself/herself primarily with the run time and not the compile time. Why?

 Choose the correct answer

Question

- Run time is always more than compile time.
- Compile time is always more than run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.

Passage

Which of the following sorting algorithms yield approximately the same worst-case and average-case running time behaviour in $O(n \log n)$?

 Choose the correct answer

Question

- Bubble sort and Selection sort
- Heap sort and Merge sort
- Quick sort and Radix sort
- Tree sort and Median-of-3 Quick sort

Passage

Srujan writes a sorting algorithm. The algorithm takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

 Choose the correct answer

Question

- All numbers in one list are more than 100, while in the other are less than 100.
- The ordering of numbers with respect to magnitude in the two list has different properties.
- One list has all negative numbers, while the other has all positive numbers.
- One list contains 0 as an element, while the other does not.

Passage

Consider the following pseudo-code

```
class brush
{
    private:
        integer size, colorcode
    function getdata() { ... } // Statement 1
    public:
        integer name // Statement 2
    function putdata() { ... }
}

function main
{
    brush b1, b2
    print b1.name // Statement 3
    b2.getdata() //Statement 4
}
```

Deleting which line will correct the error in the code?



Choose the correct answer. A pseudo-code which is similar to that of C++ and self-explanatory. An accessible member function or data member for an object are accessed by the statement `objectname.functionname` or `objectname.datamembername` respectively.

Question

- Statement 1
- Statement 2
- Statement 3
- Statement 4

Passage

How can a call to an overloaded function be ambiguous?

 Choose the correct answer

Question

- By misspelling the name
- There might be two or more functions with the same name
- There might be two or more functions with equally appropriate signatures
- None of these

Passage

Which one of the following is the lowest level format to which the computer converts a higher language program before execution?

 Choose the correct answer

Question

- English code
- Machine Code
- Assembly Language
- System Language

Passage

Tanuj writes the code for a function that takes as input n and calculates the sum of first n natural numbers.

```
Function sum( n )
{
    if(?)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

Fill in ?? in the code.

 Choose the correct answer

Question

- n equals 1
- n equals 2
- n >= 1
- n > 1

Passage

Consider the following pseudo-code

```
class rocket
{
private:
integer height, weight
public: // Statement 1
function input( int a, int b )
{
height = a;
weight = b;
}

function main ()
{
rocket rocket1, rocket2
}
```

What can we infer from this code?



Choose the correct answer. A pseudo-code which is similar to that of C++ and self-explanatory. An accessible member function or data member for an object are accessed by the statement `objectname.functionname` or `objectname.datamembename` respectively.

Question

- rocket is a class with rocket1 and rocket2 as its objects. height and weight are attributes of a rocket.
- rocket is a class with rocket1 and rocket2 as its attributes. height and weight are objects of the class rocket.
- rocket is a class with rocket1, rocket2, height and weight as its attributes.
- rocket is a class with rocket1, rocket2, height and weight as its objects.

Passage

Himanshu wants to write a program to print the larger of the two inputted number. He writes the following code:

```
int number1, number 2
input number1, number 2
if (??) // Statement 1
print number1
else
print number2
end if
```

Fill in the ?? in statement 1.



Choose the correct answer

Question

- number1 > number2
- number2 > number1
- number2 equals number1
- number1 <= number2

Passage

A stack is implemented as a linear array `A[0...N-1]`. Noor writes the following functions for popping an element from the stack.

```
function POP( top, N )
{
if(X)
{
top = top - 1
}
else
{
print "Underflow"
}
return top
}
```

Fill in the condition X



Choose the correct answer

Question

- top < N-1
- top
- top > 1
- top >= 0

Passage

Srishti writes a program to find an element in the array A[5] with the following elements in order: 8 30 40 45 70. She runs the program to find a number X. X is found in the first iteration of binary search. What is the value of X?

 Choose the correct answer

Question

- 40
- 8
- 70
- 30

Passage

A variable cannot be used...

 Choose the correct answer

Question

- Before it is declared
- After it is declared
- In the function it is declared in
- Can always be used

Passage

Shashi writes a program in C++ and passes it on to Pankaj. Pankaj does some indentation in some statements of the code. What will this lead to?

 Choose the correct answer

Question

- Faster Execution
- Lower memory requirement
- Correction of errors
- Better readability

Passage

Stuti is making a questionnaire of True-false questions. She wants to define a data-type which stores the response of the candidate for the question. What is the most-suited data type for this purpose?

 Choose the correct answer

Question

- integer
- boolean
- float
- character

Passage

Mary is making a database of animals in a zoo and their properties. The possible animals are dog, lion and zebra. Each one has as attributes isHerbivorous, colour and isNocturnal. She uses the object oriented programming paradigm for this. How will she conceptualize the system?

 Choose the correct answer

Question

- class: Animal; objects: dog, lion and zebra; data members: isHerbivorous, colour and isNocturnal
- class: Animal; objects: isHerbivorous, colour and isNocturnal; data members: dog, lion and zebra
- classes: dog, lion and zebra; objects: Animal; data members: isHerbivorous, colour and isNocturnal
- None of these

Passage

Sharmili wants to make a program to print the sum of all cubes, where the value of the cubes go from 0 to 100. She writes the following program:

```
integer i = 0, a // statement 1
integer sum = 0;
a = (i * i * i)
while (i < 100) // statement 2
{
    sum = sum + a // statement 3
    i = i + 1
    a = (i * i * i) // statement 4
}
print sum
```

Does this program have an error? If yes, which statement will you modify to correct the program?

 Choose the correct answer

Question

- Statement 1
- Statement 2
- Statement 3
- Statement 4
- No error

Passage

Sorting is not possible by using which of the following methods?

 Choose the correct answer

Question

- Insertion
- Selection
- Exchange
- Deletion

Passage

The algorithm design technique used in the quick sort algorithm is

 Choose the correct answer

Question

- Dynamic Programming
- Back Tracking
- Divide and Conquer
- Greedy Search

 Choose the correct option.

Question

Which of the following algorithms is called the shortest-remaining-time-first scheduling?

- Preemptive shortest job first(SJF) scheduling
- Non-preemptive shortest job first(SJF) scheduling
- Priority scheduling
- Round robin scheduling

 Choose the correct option.

Question

Which of the following options is not a necessary condition for Deadlock to occur?

- Mutual exclusion
- Hold and wait
- No preemption
- Circular wait
- None of these

Passage

Which one of the following is the lowest level format to which the computer converts a higher language program before execution?

 Choose the correct answer

Question

- English code
- Machine Code
- Assembly Language
- System Language

Passage

Ravi is writing a program in C++. C++ uses the 'for' keyword for loops. Due to distraction, Ravi writes 'gor' instead of 'for'. What will this result to?

 Choose the correct answer

Question

- The code will not compile.
- The code will give an error while in execution
- The code may work for some inputs and not for others.
- It will create no problems.

Passage

A complete binary tree with 5 levels has how many nodes? (Root is Level 1)

 Choose the correct answer

Question

- 15
- 25
- 63
- 31

Passage

A is an empty stack. The following operations are done on it.

PUSH(1)
PUSH(2)
POP
PUSH(5)
PUSH(6)
POP

What will the stack contain after these operations? (Top of the stack is underlined)

 Choose the correct answer

Question

- 5 6
- 1 5
- 5 6
- 1 5

Passage

Ravi is writing a program in C++. C++ uses the 'for' keyword for loops. Due to distraction, Ravi writes 'gor' instead of 'for'. What will this result to?

 Choose the correct answer

Question

- The code will not compile.
- The code will give an error while in execution
- The code may work for some inputs and not for others.
- It will create no problems.

Passage

Srujan writes a sorting algorithm. The algorithm takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

 Choose the correct answer

Question

- All numbers in one list are more than 100, while in the other are less than 100.
- The ordering of numbers with respect to magnitude in the two lists has different properties.
- One list has all negative numbers, while the other has all positive numbers.
- One list contains 0 as an element, while the other does not.

Passage

Mary is making a database of animals in a zoo and their properties. The possible animals are dog, lion and zebra. Each one has as attributes isHerbivorous, colour and isNocturnal. She uses the object oriented programming paradigm for this. How will she conceptualize the system?

 Choose the correct answer

Question

- class: Animal; objects: dog, lion and zebra; data members: isHerbivorous, colour and isNocturnal
- class: Animal; objects: isHerbivorous, colour and isNocturnal; data members: dog, lion and zebra
- classes: dog, lion and zebra; objects: Animal; data members: isHerbivorous, colour and isNocturnal
- None of these

Passage

The maximum number of nodes on level l of a binary tree is which of the following?
(Root is Level 1)

 Choose the correct answer

Question

- 2^{l-1}
- 3^{l-1}
- 2^l
- $2^l - 1$

Passage

Afzal writes a piece of code, where a set of three lines occur around 10 times in different parts of the program. What programming concept can he use to shorten his program code length?

 Choose the correct answer

Question

- Use for loops
- Use functions
- Use arrays
- Use classes

Passage

A variable cannot be used...

 Choose the correct answer

Question

- Before it is declared
- After it is declared
- In the function it is declared in
- Can always be used

Passage

Pragya sells footballs. She has a large container to store footballs which is closed from below. Footballs are piled one on top of the other in the box. When new balls are supplied, Pragya puts the balls in the box from the top. When a customer buys a ball, she delivers the ball at the top of the pile to the customer. Each ball has a code. She wants to store the ball codes in a data structure to keep track of her inventory. What data-structure should she use?

 Choose the correct answer

Question

- Queue
- Stack
- Array
- Graph

Passage

In breadth-first search, which of the following options is true?

 Choose the correct answer

Question

- Beginning from a node, first all its adjacent nodes are traversed.
- Beginning from a node, each adjacent node is fully explored before traversing the next adjacent node.
- Beginning from a node, nodes are traversed in cyclical order
- None of these

Passage

Consider a binary tree implementation. The root address is stored in the variable `root`. Given the address of a node in variable `node`, its value, right and root child node address can be accessed using the following statements respectively: `node-> value`, `node-> right`, `node-> left`. Srikanth writes the following function to do a preorder traversal of the tree.

```
function preordertraverse(node)
{
    print node-> value
    if (Condition X)
        { preordertraverse(node->left) }
    if (Condition Y)
        { preordertraverse(node->right) }
    return
}
```

What is condition X and Condition Y?

Passage

Shravanti writes the following program:

```
integer i = 0, j
while ( i < 2 )
{
    j = 0;
    while ( j <= 3*i )
    {
        print j
        print blank space
        j = j + 3
    }
    print end-of-line //takes the cursor to the next line
    i = i + 1
}
```

What will be the output of the program?

 Choose the correct answer

Question

- Condition X: `node-> left != null`
Condition Y: `node-> right != null`
- Condition X: `node-> right != null`
Condition Y: `node-> left != null`
- Condition X: `node-> left == null`
Condition Y: `node-> right == null`
- Condition X: `node-> right == null`
Condition Y: `node-> left == null`

 Choose the correct answer

Question

- 0
0 3
- 0 3
0 3 6
- 0
0 3 6
0 3 6 9
- 0 3 6
0 3 6 9
0 3 6 9 12

Passage

Consider the following code:

```
function modify(y,z)
{
    y = y + 1;
    z = z + 1;
    return y - z
}

function calculate()
{
    integer a = 5, b = 10, c
    c = modify(a, b);
    print a
    print space
    print c
}
```

Passage

Abhinav wants to find the largest number in a given list of 20 numbers. Which of the following options is an efficient approach to do this?

 Choose the correct answer

Question

- 11 -5
- 10 -5
- 6 -5
- 5 -5

 Choose the correct answer

Question

- Use bubble sort to sort the list in descending order and then print the first number of the series.
- Use selection sort to sort the list in descending order and then print the first number of the series.
- Implement one iteration of selection sort for descending order and print the first number in the series.
- None of these

Passage

Shashi writes a program in C++ and passes it on to Pankaj. Pankaj does some indentation in some statements of the code. What will this lead to?

 Choose the correct answer

Question

- Faster Execution
- Lower memory requirement
- Correction of errors
- Better readability

Passage

Himanshu wants to write a program to print the larger of the two inputted number. He writes the following code:

```
int number1, number 2  
input number1, number 2  
if (??) // Statement 1  
print number1  
else  
print number2  
end if  
Fill in the ?? in statement 1.
```

 Choose the correct answer

Question

number1 > number2

number2 > number1

number2 equals number1

number1 <= number2

Passage

In which area of a class are data and function directly accessible outside the class?

 Choose the correct answer

Question

Public

Private

Protected

None of these

Passage

Shashi writes a program in C++ and passes it on to Pankaj. Pankaj does some indentation in some statements of the code. What will this lead to?

 Choose the correct answer

Question

Faster Execution

Lower memory requirement

Correction of errors

Better readability

Passage

Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same address by using the key. What is this search mechanism?

 Choose the correct answer

Question

- Linear Search
- Binary search
- Hash Coded Search
- None of these

Passage

Sorting is not possible by using which of the following methods?

 Choose the correct answer

Question

- Insertion
- Selection
- Exchange
- Deletion

Passage

Stack is useful for implementing

 Choose the correct answer

Question

- Radix Search
- Breadth First Search
- Recursion
- None of these

Passage

Tanuj writes the code for a function that takes as input n and calculates the sum of first n natural numbers.

```
Function sum( n )
{
    if(??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

Fill in ?? in the code.

 Choose the correct answer

Question

- n equals 1
- n equals 2
- n >= 1
- n > 1

Passage

What is implied by the argument of a function?

 Choose the correct answer

Question

- The variables passed to it when it is called
- The value it returns on execution
- The execution code inside it
- Its return type

Passage

Shashi writes a program in C++ and passes it on to Pankaj. Pankaj does some indentation in some statements of the code. What will this lead to?

 Choose the correct answer

Question

- Faster Execution
- Lower memory requirement
- Correction of errors
- Better readability



Choose the correct answer

Question

What is the term given to the variable whose scope is beyond all the scopes i.e., it can be accessed by all the scopes?

- Universal Variable
- Global Variable
- External Variable
- Auto Variable
- Both 2 and 3

Passage

There are two loops which are nested. This implies which one of the following?

 Choose the correct answer

Question

- Two loops, one after the other
- Two loops, one inside the other
- One loop with two different iteration counts
- Two loops with the same iteration count

Passage

The algorithm design technique used in the quick sort algorithm is

 Choose the correct answer

Question

- Dynamic Programming
- Back Tracking
- Divide and Conquer
- Greedy Search

Passage

In an implementation of a linked list, each node contains data and address. Which of the following could the address field possibly contain?

 Choose the correct answer

Question

Address of next node in sequence

Its own address

Address of last node

Address of first node



Choose the correct answer

Question

Yashi wants to implement priority queues using arrays. What is the minimum number of arrays that she should use to serve the purpose?

1

2

3

4

Passage

A variable cannot be used...

 Choose the correct answer

Question

Before it is declared

After it is declared

In the function it is declared in

Can always be used

Passage

For solving a problem, which of these is the first step in developing a working program for it?

 Choose the correct answer

Question

Writing the program in the programming language

Writing a step-by-step algorithm to solve the problem.

Compiling the libraries required.

Code debugging

Passage

What will be the output of the following pseudo-code statements?

```
integer a = 456, b, c, d=10  
b = a/d  
c = a - b  
print c
```



Choose the correct answer:

A pseudo-code is used. Assume that when two data-types are processed through an operator, the answer maintains the same data-type as the input data-types. Assume that all data-types have enough range to accommodate any number. If two different data-types are operated on, the result assumes the more expressive data-type.

Question

- 410
- 410.4
- 411.4
- 411

Passage

How can a call to an overloaded function be ambiguous?



Choose the correct answer

Question

- By misspelling the name
- There might be two or more functions with the same name
- There might be two or more functions with equally appropriate signatures
- None of these

Passage

Which of the following options describes a tree?



Choose the correct answer

Question

- An unconnected graph
- A connected graph
- A connected acyclic graph
- A complete graph

Passage

While calculating time complexity of an algorithm, the designer concerns himself/herself primarily with the run time and not the compile time. Why?



Choose the correct answer

Question

- Run time is always more than compile time.
- Compile time is always more than run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.

Passage

A sort, which uses the binary tree concept such that any number in the tree is larger than all the numbers in the subtree below it, is called

 Choose the correct answer

Question

- Selection Sort
- Insertion Sort
- Heap Sort
- Quick Sort

Passage

In which area of a class are data and function directly accessible outside the class?

 Choose the correct answer

Question

- Public
- Private
- Protected
- None of these

Passage

Which of the following options refers to data-hiding in Object Oriented Programming?

 Choose the correct answer

Question

- A class does not have functions as private members.
- A class has both data and functions on the data in the class.
- Data in private and protected area of a class is not directly accessible and can only be accessed through member functions in the public area of class.
- A single class can have many objects.

Passage

A derived class may inherit from the base class which of the following? (Consider assumptions as in C++)

 Choose the correct answer

Question

- Data members
- Member functions
- Constructors and destructors
- Both data members and member functions

Passage

Tanuj writes the code for a function that takes as input n and calculates the sum of first n natural numbers.

```
Function sum(n)
{
    if(??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

Fill in ?? in the code.

 Choose the correct answer

Question

n equals 1

n equals 2

n >= 1

n > 1

Passage

Shrishti writes the code for a function that computes the factorial of the inputted number n.

```
function factorial(n)
{
    if(n equals 1)
        return 1
    else
        - MISSING STATEMENT -
    end
}
```

Fill in the missing statement.

 Choose the correct answer

Question

return factorial(n-1)

return n*factorial(n)

return n*(n-1)

return n*factorial(n-1)

Passage

Stuti is making a questionnaire of True-false questions. She wants to define a data-type which stores the response of the candidate for the question. What is the most-suited data type for this purpose?

 Choose the correct answer

Question

integer

boolean

float

character

Passage

Pragya sells footballs. She has a large container to store footballs which is closed from below. Footballs are piled one on top of the other in the box. When new balls are supplied, Pragya puts the balls in the box from the top. When a customer buys a ball, she delivers the ball at the top of the pile to the customer. Each ball has a code. She wants to store the ball codes in a data structure to keep track of her inventory. What data-structure should she use?

 Choose the correct answer

Question

- Queue
- Stack
- Array
- Graph

Passage

integer a = 40, b = 35, c = 20, d = 10

Comment about the output of the following two statements:

```
print a * b / c - d  
print a * b / (c - d)
```

 Choose the correct answer:

Assume the following precedence (high to low). Operators in the same row have the same precedence:

(.)
*/
+-
AND
OR

For operators with equal precedence, the precedence is from left-to-right in expression.

Question

- Differ by 80
- Same
- Differ by 50
- Differ by 160

Passage

A function contained within a class is called?

 Choose the correct answer

Question

- A member function
- An operator
- A class function
- A method

 Choose the correct answer

Question

Which of the following accessibility modes can be the specifier of a top level class?

1. Private
2. Protected
3. Public
4. No modifier

Only 3

- Only 4
- Both 1 and 3
- Both 2 and 3
- Both 3 and 4

Passage

While calculating time complexity of an algorithm, the designer concerns himself/herself primarily with the run time and not the compile time. Why?

 Choose the correct answer

Question

- Run time is always more than compile time.
- Compile time is always more than run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.

Passage

Shahaana has a 10,000 line code. She is trying to debug it. She knows there is a logical error in the first 25 lines of the code. Which of the following options will be an efficient way of debugging?

 Choose the correct answer

Question

- Compile the whole code and step into it line by line
- Use an interpreter on the first 25 lines.
- Compile the whole code and run it
- None of these

Passage

Tanuj writes the code for a function that takes as input n and calculates the sum of first n natural numbers.

```
Function sum( n )
{
if(??)
    return 1
else
    return (n + sum(n-1))
end
}
```

Fill in ?? in the code.

 Choose the correct answer

Question

n equals 1

n equals 2

n >= 1

n > 1

Passage

A full binary tree with n non-leaf nodes contains

 Choose the correct answer

Question

(log n) nodes

n + 1 nodes

2n + 1 nodes

2n nodes

Passage

Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same address by using the key. What is this search mechanism?

 Choose the correct answer

Question

Linear Search

Binary search

Hash Coded Search

None of these

Passage

A variable cannot be used...

 Choose the correct answer

Question

Before it is declared

After it is declared

In the function it is declared in

Can always be used

Passage

A linear list of elements in which deletion can be done from one end (front) and insertion can take place at the other end (rear) is known as

 Choose the correct answer

Question

Queue

Stack

Tree

Branch

Passage

A complete binary tree with 5 levels has how many nodes? (Root is Level 1)

 Choose the correct answer

Question

15

25

63

31

Passage

While calculating time complexity of an algorithm, the designer concerns himself/herself primarily with the run time and not the compile time. Why?

 Choose the correct answer

Question

Run time is always more than compile time.

Compile time is always more than run time.

Compile time is a function of run time.

A program needs to be compiled once but can be run several times.

Passage

Zenab and Shashi independently write a program to find the mass of one mole of water, which includes mass of hydrogen and oxygen. Zenab defines the variables:
integer hydrogen, oxygen, water // Code A
while Shashi defines the three quantities as:
integer a, b, c // Code B

Which is a better programming practice and why?

 Choose the correct answer

Question

Code B is better because variable names are shorter

Code A is better because the variable names are understandable and non-confusing

Code A will run correctly, while Code B will give an error.

Code B will run correctly, while Code A will give an error.

Passage

Pankaj and Mythili were both asked to write the code to evaluate the following expression:

$$a - b + c/(a-b) + (a-b)^2$$

Pankaj writes the following code statements (Code A):

```
print (a-b) + c/(a-b) + (a-b)*(a-b)
```

Mythili writes the following code statements (Code B):

```
d = (a-b)
```

```
print d + c/d + d*d
```

If the time taken to load a value in a variable, for addition, multiplication or division between two operands is same, which of the following is true?

 Choose the correct answer

Question

Code A uses lesser memory and is slower than Code B

Code A uses lesser memory and is faster than Code B

Code A uses more memory and is faster than Code B

Code A uses more memory and is slower than Code B

Passage

For solving a problem, which of these is the first step in developing a working program for it?

 Choose the correct answer

Question

Writing the program in the programming language

Writing a step-by-step algorithm to solve the problem.

Compiling the libraries required.

Code debugging



Choose the correct answer

Question

Which of the following data types does not belong to the category of abstract data types?

Hashtable

Set

Object

Stack

Passage

What is implied by the argument of a function?

 Choose the correct answer

Question

The variables passed to it when it is called

The value it returns on execution

The execution code inside it

Its return type

Passage

Sorting is not possible by using which of the following methods?



Choose the correct answer

Question

- Insertion
- Selection
- Exchange
- Deletion

Passage

The algorithm design technique used in the quick sort algorithm is



Choose the correct answer

Question

- Dynamic Programming
- Back Tracking
- Divide and Conquer
- Greedy Search



Choose the correct answer.

Question

Assume the following precedence (high to low). Operators in the same row have the same precedence.

(.)
*/
+ -
AND
OR

The precedence is from left to right in the expression for the operators with equal precedence.

Which of the following statements is TRUE about the output of the code statements given below?

```
integer a = 40, b = 35, c = 20, d = 10
print a * b / c - d
print a * b / (c - d)
```

- The outputs differ by 80.
- The outputs are the same.
- The outputs differ by 50.
- The outputs differ by 160.

 Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.

 Choose the correct answer.

Question

A programmer writes a sorting algorithm that takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

- All numbers in one list are more than 100 while in the other are less than 100.
- The ordering of numbers with respect to the magnitude in the two lists has different properties.
- One list has all negative numbers while the other has all positive numbers.
- One list contains 0 as an element while the other does not.



Choose the correct answer.

Question

A programmer is making a database of animals in a zoo along with their properties. The possible animals are dog, lion and zebra. Each one has attributes as herbivorous, color and nocturnal. The programmer uses the object-oriented programming paradigm for this. How will the system be conceptualized?

- class: Animal; objects: dog, lion and zebra; data members: herbivorous, color and nocturnal
- class: Animal; objects: herbivorous, color and nocturnal; data members: dog, lion and zebra
- classes: dog, lion and zebra; objects: Animal; data members: herbivorous, color and nocturnal
- None of the above



Choose the correct answer.

Question

A stack is implemented as a linear array A[0...N-1]. A programmer writes the function given below to pop out an element from the stack.

```
function POP( top, N )
{
    if (X)
    {
        top = top - 1
    }
    else
    {
        print "Underflow"
    }
    return top
}
```

Which of the following should substitute the condition "X"?

- top<N-1
- top<N
- top>1
- top>= 0

 Choose the correct answer.

Question

Which of the following is the lowest level format to which the computer converts a program in a higher language before execution?

- English code
- Machine code
- Assembly language
- System language

 Choose the correct answer.

Question

A sorting algorithm traverses through a list, comparing adjacent elements and switching them under certain conditions. What is this sorting algorithm called?

- Insertion sort
- Heap sort
- Quick sort
- Bubble sort

 Choose the correct answer.

Question

A programmer writes a sorting algorithm that takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

- All numbers in one list are more than 100 while in the other are less than 100.
- The ordering of numbers with respect to the magnitude in the two lists has different properties.
- One list has all negative numbers while the other has all positive numbers.
- One list contains 0 as an element while the other does not.

Passage

```
integer n, i,j  
input n  
for i =0 to n increment 1  
{  
    print end-of-line //takes the cursor to the next line  
    for j=0 to i increment 1  
    {  
        if ( i-j equals 1 )  
            print "1"  
        else  
            print "10"  
    }  
}
```

Question

Madhumita writes the given pseudo code to print a pattern on screen.
What is the pattern that this code will print on screen if the value of n is 4?

- 
- 1
101
10101
 - 1
101
10101
1010101
 - 1
010
10101
 - 1
010
10101
0101010

Passage

Afzal writes a piece of code, where a set of three lines occur around 10 times in different parts of the program. What programming concept can he use to shorten his program code length?

 Choose the correct answer

Question

- Use for loops
- Use functions
- Use arrays
- Use classes



Choose the correct answer.

Question

Consider the given conditions in regards to binary search performed on an array named *MyArray* -

1. *Beg > End*
2. *Beg ≤ End*
3. *MyArray[mid] != item_to_be_searched*

Which of the given conditions forms the termination condition of an iterative binary search function when the variables *Beg*, *End* and *mid* have their usual meanings?

- Only 1
- Only 2
- Only 3
- Both 2 and 3
- All 1, 2 and 3



Choose the correct answer.

Question

Which of the following refers to data hiding in object-oriented programming?

- A class does not have functions as private members.
- A class has both data and functions in the data in the class.
- Data in the private and protected area of a class is not directly accessible and can only be accessed through member functions in the public area of class.
- A single class can have many objects.



Choose the correct answer.

Question

Which of the following can be inherited by a derived class from a base class?

- Data members
- Member functions
- Constructors and destructors
- Data members and member functions

 Choose the correct answer.

Question

The function given below computes the factorial of the number "n" entered by a user. What should be the "MISSING STATEMENT" in order to make the code work properly?

```
function factorial(n)
{
    if (n equals 1)
        return 1
    else
-- MISSING STATEMENT --
    end
}
```

- return factorial(n-1)
- return n*factorial(n)
- return n*(n-1)
- return n*factorial(n-1)

 Choose the correct answer.

Question

Assume the following precedence (high to low). Operators in the same row have the same precedence.

(.)
*/
+ -
AND
OR

The precedence is from left to right for the operators with equal precedence.

What will be the output of the following code statements?

```
integer a = 50, b = 25, c = 5
print a * b / c + c
```

- 120
- 125
- 255
- 250

 Choose the correct answer

Question

Preeti writes a program in a low level language, now she wants to translate it into a higher language without rewriting the program. What another program she must use for this purpose?

- Compiler
- Decompiler
- Interpreter
- Executer
- Cross Compiler

 Choose the correct answer.

Question

In a linear list of elements, a deletion can be made from one end (front) and an insertion can be made at the other end (rear). What is this linear list known as?

- Queue
- Stack
- Tree
- Branch

 Choose the correct answer.

Question

Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same address by using the key. What is this search mechanism?

- Linear search
- Binary search
- Hash coded search
- None of the above

 Choose the correct answer.

Question

What is the first step for developing a working program to solve a problem?

- To write the program in the programming language
- To write a step-by-step algorithm to solve the problem
- To compile the required libraries
- To debug the code

 Choose the correct answer.

Question

How many nodes does a complete binary tree with 5 levels have, if the root is considered to be at level 1?

- 15
- 25
- 63
- 31

 Choose the correct answer.

Question

Two programmers independently write a program to find the mass of one mole of water, that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:
`integer hydrogen, oxygen, water // Code A`

The second programmer defines three quantities as:
`integer a, b, c // Code B`

Which of the two is a better programming practice and why?

- Code B is better because variable names are shorter.
- Code A is better because the variable names are understandable and non-confusing.
- Code A would run correctly while Code B would give an error.
- Code B would run correctly while Code A would give an error.



Choose the correct answer

Question

Raj has a list of n numbers each of a fixed size k . He sorts them using radix sort technique. Which of the following options gives the complexity of this operation?

- O($n \cdot k$)
- O(nk)
- O($k \log n$)
- $k \cdot O(\log n)$



Choose the correct answer.

Question

Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

- Run time is always more than the compile time.
- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.



Choose the correct answer.

Question

In which of the following methods is sorting NOT possible?

- Insertion
- Selection
- Exchange
- Deletion



Choose the correct answer.

Question

Which of the following algorithm design techniques is used in the quick sort algorithm?

- Dynamic programming
- Back tracking
- Divide and conquer
- Greedy search



Choose the correct answer.

Question

Which of the following statements is TRUE about a breadth first search?

- Beginning from a node, all the adjacent nodes are traversed first
- Beginning from a node, each adjacent node is fully explored before traversing the next adjacent node
- Beginning from a node, the nodes are traversed in cyclic order
- None of the above



Choose the correct answer.

Question

What will the output of the following pseudocode statements be?

(Note: Assume that when two data types are processed through an operator, the answer maintains the same data type as that of the input. Also, all data types have enough range to accommodate any number. If two different data types are operated upon, the result assumes the data type that is more expressive.)

```
integer a = 456, b, c, d =10  
b = a/d  
c = a - b  
print c
```

- 410
- 410.4
- 411.4
- 411

Passage

```
function Display( string MyStr ) //Statement 1  
{  
    print "Hello My name is"  
    print MyStr //Statement 2  
}  
function main() // Statement 3  
{  
    string str = " Mr.Beans"  
    integer num = Display( str ) // Statement 4  
}
```



Choose the correct answer:

A pseudo-code is used which is self explanatory.
// in pseudo code refers to comment

Question

Consider the given code to print a name on the screen. Which statement will generate an error?

- Statement 1
- Statement 2
- Statement 3
- Statement 4
- This code will run without any error

 Choose the correct answer.

Question

The function given below takes a number "n" as the input and calculates the sum of first "n" natural numbers. Which of the following statements should be inserted in place of "???" to get the required output?

```
function sum(n)
{
    if (??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

- n equals 1
- n equals 2
- n>= 1
- n>1

Passage

integer a = 40, b = 35, c = 20, d = 10

Comment about the output of the following two statements:

```
print a * b / c - d
print a * b / (c - d)
```

 Choose the correct answer:
Assume the following precedence (high to low). Operators in the same row have the same precedence:
()
* /
+ -
AND
OR
For operators with equal precedence, the precedence is from left-to-right in expression.

Question

- Differ by 80
- Same
- Differ by 50
- Differ by 160

Passage

Sorting is not possible by using which of the following methods?

 Choose the correct answer

Question

- Insertion
- Selection
- Exchange
- Deletion

 Choose the correct option.

Question

Which of the following statements is true about the logical view of a database?

- It is also known as physical view and there can be one or more logical views of a database
- It is also known as physical view and there is only one logical view of a database
- It is also known as conceptual view and there can be one or more logical views of a database
- It is also known as conceptual view and there is only one logical view of a database

Passage

Srujan writes a sorting algorithm. The algorithm takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

 Choose the correct answer

Question

- All numbers in one list are more than 100, while in the other are less than 100.
- The ordering of numbers with respect to magnitude in the two lists has different properties.
- One list has all negative numbers, while the other has all positive numbers.
- One list contains 0 as an element, while the other does not.

Passage

Stack is useful for implementing

 Choose the correct answer

Question

- Radix Search
- Breadth First Search
- Recursion
- None of these

Passage

Mary is making a database of animals in a zoo and their properties. The possible animals are dog, lion and zebra. Each one has as attributes isHerbivorous, colour and isNocturnal. She uses the object oriented programming paradigm for this. How will she conceptualize the system?

 Choose the correct answer

Question

- class: Animal; objects: dog, lion and zebra; data members: isHerbivorous, colour and isNocturnal
- class: Animal; objects: isHerbivorous, colour and isNocturnal; data members: dog, lion and zebra
- classes: dog, lion and zebra; objects: Animal; data members: isHerbivorous, colour and isNocturnal
- None of these

 Choose the correct option.

Question

Which of the following statements is/are true related to the kernel?

1. A kernel connects the application software to the hardware of a computer.
2. Monolithic Kernel and Micro Kernel are the types of a kernel.
3. The kernel has full access to the system's memory.

- Only 1
- Only 2
- Both 1 and 2
- Both 2 and 3
- All-1, 2 and 3

Passage

Stuti is making a questionnaire of True-false questions. She wants to define a data-type which stores the response of the candidate for the question. What is the most-suited data type for this purpose?

 Choose the correct answer

Question

- integer
- boolean
- float
- character

Passage

What is space complexity of a program?

 Choose the correct answer

Question

- Amount of hard-disk space required to store the program
- Amount of hard-disk space required to compile the program
- Amount of memory required by the program to run
- Amount of memory required for the program to compile

Passage

Zenab and Shashi independently write a program to find the mass of one mole of water, which includes mass of hydrogen and oxygen. Zenab defines the variables:

```
integer hydrogen, oxygen, water // Code A  
while Shashi defines the three quantities as:  
integer a, b, c // Code B
```

Which is a better programming practice and why?

 Choose the correct answer

Question

- Code B is better because variable names are shorter
- Code A is better because the variable names are understandable and non-confusing
- Code A will run correctly, while Code B will give an error.
- Code B will run correctly, while Code A will give an error.

Passage

How can a call to an overloaded function be ambiguous?

 Choose the correct answer

Question

- By misspelling the name
- There might be two or more functions with the same name
- There might be two or more functions with equally appropriate signatures
- None of these

Passage

Consider the following pseudo-code

```
class brush
{
private:
integer size, colorcode
function getdata() { ... } // Statement 1
public:
integer name // Statement 2
function putdata() { ... }
}

function main
{
brush b1, b2
print b1.name // Statement 3
b2.getdata() // Statement 4
}
```

Deleting which line will correct the error in the code?

i Choose the correct answer. A pseudo-code which is similar to that of C++ and is self-explanatory. An accessible member function or data member for an object are accessed by the statement `objectname.functionname` or `objectname.datamembername` respectively.

Question

- Statement 1
- Statement 2
- Statement 3
- Statement 4

i Choose the correct answer.

Question

In an implementation of a linked list, each node contains data and address. Which of the following can the address field possibly contain?

- Address of the next node in sequence
- Its own address
- Address of the last node
- Address of the first node

Passage

```
class rocket
{
private:
integer height, weight
public: // Statement 1
function input( int a, int b )
{
height = a;
weight = b;
}
}

function main()
{
rocket rocket1, rocket2
}
```

i Choose the correct answer.

Question

Refer to the pseudocode given in the 'Passage'. The code is similar to that in C++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements `objectname.functionname` and `objectname.datamembername`, respectively. What can be inferred from this code?

- "rocket" is a class with "rocket1" and "rocket2" as its objects, with "height" and "weight" as its attributes.
- "rocket" is a class with "rocket1" and "rocket2" as its objects, with "height" and "weight" as its objects.
- "rocket" is a class with "rocket1", "rocket2", "height" and "weight" as its attributes.
- "rocket" is a class with "rocket1", "rocket2", "height" and "weight" as its objects.



Choose the correct answer.

Question

The program to print the larger of the two numbers entered by a user is given below. Which of the following should be substituted in place of "???" in Statement 1 of the code to get the desired output?

```
int number1, number 2  
input number1, number 2  
if (???) // Statement 1  
print number1  
else  
print number2  
end if
```

number1>number2

- number2>number1
- number2 equals number1
- number1<= number2



Choose the correct answer.

Question

Which of the following statements is TRUE about a variable?

A variable cannot be used before it is declared.

- A variable cannot be used after it is declared.
- A variable cannot be used in the function it is declared in.
- A variable can always be used.



Choose the correct answer

Question

Each node in a Doubly Linked List contains the following parts except which one of the following?

Header

- Address of preceding element
- Address of succeeding element
- Information of the node



Choose the correct answer.

Question

In which of the following areas of a class are data and functions directly accessible outside the class?

Public

- Private
- Protected
- None of the above



Choose the correct answer.

Question

Which of the following refers to data hiding in object-oriented programming?

- A class does not have functions as private members.
- A class has both data and functions in the data in the class.
- Data in the private and protected area of a class is not directly accessible and can only be accessed through member functions in the public area of class.
- A single class can have many objects.



Choose the correct answer.

Question

The function given below computes the factorial of the number "n" entered by a user. What should be the "MISSING STATEMENT" in order to make the code work properly?

```
function factorial(n)
{
    if (n equals 1)
        return 1
    else
-- MISSING STATEMENT --
    end
}
```

- return factorial(n-1)
- return n*factorial(n)
- return n*(n-1)
- return n*factorial(n-1)



Fill in the blanks

Question

_____ is the compile time binding whereas _____ is run time binding of functions.

- Function overriding, Function overloading
- Abstraction, Encapsulation
- Function overloading, Function overriding
- Varies from program to program

Passage

```
function modify(a,b)
{
    integer c, d = 2
    c = a*d + b
    return c
}

function calculate( )
{
    integer a = 5, b = 20, c
    integer d = 10
    c = modify(a, b);
    c = c + d
    print c
}
```

 Choose the correct answer.

Question

Consider the code given in the 'Passage'. Assume that "a" and "b" are passed by value. What will the output of the program be when the function *calculate()* is executed?

- 80
- 40
- 32
- 72



Choose the correct answer.

Question

A football seller stores all the footballs in a large container that is closed from the bottom. The footballs are stacked on top of each other in the box. The new supply of balls is put in the box from the top. When a customer buys a football, the one at the top of the stack is given to the customer. Each football has a code. The seller wants to store the codes of all the footballs in a data structure to keep track of the inventory. Which data structure should be used for this purpose?

- Queue
- Stack
- Array
- Graph

Passage

While calculating time complexity of an algorithm, the designer concerns himself/herself primarily with the run time and not the compile time. Why?

 Choose the correct answer

Question

- Run time is always more than compile time.
- Compile time is always more than run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.

Passage

Srujan writes a sorting algorithm. The algorithm takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

 Choose the correct answer

Question

- All numbers in one list are more than 100, while in the other are less than 100.
- The ordering of numbers with respect to magnitude in the two list has different properties.
- One list has all negative numbers, while the other has all positive numbers.
- One list contains 0 as an element, while the other does not.

Passage

Mary is making a database of animals in a zoo and their properties. The possible animals are dog, lion and zebra. Each one has as attributes isHerbivorous, colour and isNocturnal. She uses the object oriented programming paradigm for this. How will she conceptualize the system?

 Choose the correct answer

Question

- class: Animal; objects: dog, lion and zebra; data members: isHerbivorous, colour and isNocturnal
- class: Animal; objects: isHerbivorous, colour and isNocturnal; data members: dog, lion and zebra
- classes: dog, lion and zebra; objects: Animal; data members: isHerbivorous, colour and isNocturnal
- None of these

Passage

Tanuj writes the code for a function that takes as input n and calculates the sum of first n natural numbers.

```
Function sum( n )
{
    if(??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

Fill in ?? in the code.

 Choose the correct answer

Question

- n equals 1
- n equals 2
- n >= 1
- n > 1

Passage

A full binary tree with n non-leaf nodes contains

 Choose the correct answer

Question

- $(\log n)$ nodes
- $n + 1$ nodes
- $2n + 1$ nodes
- $2n$ nodes

Passage

Ravi is writing a program in C++. C++ uses the 'for' keyword for loops. Due to distraction, Ravi writes 'gor' instead of 'for'. What will this result to?

 Choose the correct answer

Question

- The code will not compile.
- The code will give an error while in execution
- The code may work for some inputs and not for others.
- It will create no problems.

Passage

A sorting algorithm traverses through a list, comparing adjacent elements and switching them under certain conditions. What is this sorting algorithm called?

 Choose the correct answer

Question

- Insertion Sort
- Heap Sort
- Quick Sort
- Bubble Sort

Passage

There are two loops which are nested. This implies which one of the following?

 Choose the correct answer

Question

- Two loops, one after the other
- Two loops, one inside the other
- One loop with two different iteration counts
- Two loops with the same iteration count

Passage

What is implied by the argument of a function?

 Choose the correct answer

Question

- The variables passed to it when it is called
- The value it returns on execution
- The execution code inside it
- Its return type

Passage

In an implementation of a linked list, each node contains data and address. Which of the following could the address field possibly contain?

 Choose the correct answer

Question

- Address of next node in sequence
- It's own address
- Address of last node
- Address of first node

Passage

Stuti is making a questionnaire of True-false questions. She wants to define a data-type which stores the response of the candidate for the question. What is the most-suited data type for this purpose?

 Choose the correct answer

Question

- integer
- boolean
- float
- character

Passage

Group A	Group B
A. Distance vector interior routing protocol	1. Open Shortest Path First (OSPF)
B. Distance vector exterior routing protocol	2. Enhanced Interior Gateway Routing Protocol (EIGRP)
C. Link-state interior routing protocol	3. Routing Information Protocol (RIP)
D. Hybrid interior routing protocol	4. Border Gateway Protocol (BGP)

 Match the following.

Question

Match the given Routing Strategies in Group A with their examples in Group B.

- A-4, B-2, C-3, D-1
- A-1, B-4, C-2, D-3
- A-3, B-4, C-1, D-2
- A-4, B-3, C-1, D-2

Passage

Zenab and Shashi independently write a program to find the mass of one mole of water, which includes mass of hydrogen and oxygen. Zenab defines the variables:
integer hydrogen, oxygen, water // Code A
while Shashi defines the three quantities as:
integer a, b, c // Code B

Which is better programming practice and why?

 Choose the correct answer

Question

- Code B is better because variable names are shorter
- Code A is better because the variable names are understandable and non-confusing
- Code A will run correctly, while Code B will give an error.
- Code B will run correctly, while Code A will give an error.

Passage

Ravi and Rupali are asked to write a program to sum the rows of a 2x2 matrices stored in the array A.

Ravi writes the following code (Code A):

```
for n = 0 to 1
    sumRow1[n] = A[n][1] + A[n][2]
end
```

Rupali writes the following code (Code B):

```
sumRow1[0] = A[0][1] + A[0][2]
sumRow1[1] = A[1][1] + A[1][2]
```

Comment upon these codes (Assume no loop-unrolling done by compiler):

 Choose the correct answer

Question

- Code A will execute faster than Code B.
- Code B will execute faster than Code A
- Code A is logically incorrect.
- Code B is logically incorrect.

Passage

In an implementation of a linked list, each node contains data and address. Which of the following could the address field possibly contain?

 Choose the correct answer

Question

- Address of next node in sequence
- It's own address
- Address of last node
- Address of first node

Passage

Consider the following pseudo-code

```
class brush
{
private:
integer size, colorcode
function getdata( ) { ... } // Statement 1
public:
integer name // Statement 2
function putdata( ) { ... }
}

function main
{
brush b1, b2
print b1.name // Statement 3
b2.getdata() //Statement 4
}
```



Choose the correct answer. A pseudo-code which is similar to that of C++ and self-explanatory. An accessible member function or data member for an object are accessed by the statement `objectname.functionname` or `objectname.datamembename` respectively.

Question

- Statement 1
- Statement 2
- Statement 3
- Statement 4

Passage

A stack is implemented as a linear array `A[0...N-1]`. Noor writes the following functions for popping an element from the stack.

```
function POP(top, N)
{
if(X)
{
top = top - 1
}
else
{
print "Underflow"
}
return top
}
```

Fill in the condition X



Choose the correct answer

- Question**
- `top < N-1`
 - `top`
 - `top > 1`
 - `top >= 0`

Passage

Smriti wants to make a program to print the sum of square of the first 5 whole numbers (0...4). She writes the following program:

```
integer i = 0 // statement 1
integer sum = 0 // statement 2
while ( i < 5 ) // statement 3
{
    sum = i*i // statement 4
    i = i + 1 // statement 5
}
print sum // statement 6
```

Is her program correct? If not, which statement will you modify to correct it?

 Choose the correct answer

Question

- No error, the program is correct.
- Statement 1
- Statement 4
- statement 6

Passage

Afzal writes a piece of code, where a set of three lines occur around 10 times in different parts of the program. What programming concept can he use to shorten his program code length?

 Choose the correct answer

Question

- Use for loops
- Use functions
- Use arrays
- Use classes

 Choose the correct answer.

Question

How many nodes does a complete binary tree with 5 levels have, if the root is considered to be at level 1?

- 15
- 25
- 63
- 31

 Choose the correct answer.

Question

In a linear list of elements, a deletion can be made from one end (front) and an insertion can be made at the other end (rear). What is this linear list known as?

- Queue
- Stack
- Tree
- Branch

 Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.



Choose the correct answer.

Question

What is the first step for developing a working program to solve a problem?

- To write the program in the programming language
- To write a step-by-step algorithm to solve the problem
- To compile the required libraries
- To debug the code



Choose the correct answer

Question

Consider the given list of sorting algorithms-

1. Selection Sort
2. Radix Sort
3. Shell Sort
4. Heap Sort

Which of the above mentioned algorithms uses the selection method for bringing out the sorting?

- Only 1

- Only 3
- Both 1 and 4
- Both 2 and 3
- Both 2 and 4

 Choose the correct answer.

Question

Two programmers independently write a program to find the mass of one mole of water, that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:
integer hydrogen, oxygen, water // Code A

The second programmer defines three quantities as:
integer a, b, c // Code B

Which of the two is a better programming practice and why?

- Code B is better because variable names are shorter.
- Code A is better because the variable names are understandable and non-confusing.
- Code A would run correctly while Code B would give an error.
- Code B would run correctly while Code A would give an error.

 Choose the correct answer.

Question

In which of the following methods is sorting NOT possible?

- Insertion
- Selection
- Exchange
- Deletion

 Choose the correct answer.

Question

Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same address by using the key. What is this search mechanism?

- Linear search
- Binary search
- Hash coded search
- None of the above

 Choose the correct answer.

Question

What is implied by the argument of a function?

- The variables passed to the function when it is called
- The value that the function returns on execution
- The execution code inside the function
- Return type of the function

Passage

```
function MyFunc1( integer n )
{
    return n*2
}

function MyFunc2( integer n )
{
    print "The value is " n
}
```

 Choose the correct answer:

A pseudo-code is used which is self explanatory.

Question

Which of the given two functions can be categorized as procedure?

- MyFunc1
- MyFunc2
- Both MyFunc1 and MyFunc2
- A function cannot be a procedure



Choose the correct answer

Question

In which of the following cases, Doubly Linked List are preferred over Singly Linked List?

- Searching an item in an unsorted list
- Traversing a list
- Deleting a node whose location is given
- Interchanging two nodes



Choose the correct answer.

Question

The program to print the larger of the two numbers entered by a user is given below. Which of the following should be substituted in place of "???" in Statement 1 of the code to get the desired output?

```
int number1, number 2  
input number1, number 2  
if (???) // Statement 1  
print number1  
else  
print number2  
end if
```

- number1>number2
- number2>number1
- number2 equals number1
- number1<= number2



Choose the correct answer.

Question

Which of the following refers to data hiding in object-oriented programming?

- A class does not have functions as private members.
- A class has both data and functions in the data in the class.
- Data in the private and protected area of a class is not directly accessible and can only be accessed through member functions in the public area of class.
- A single class can have many objects.



Choose the correct answer.

Question

What will happen if some indentations are made in some statements of a code written in C++?

- Faster execution of the code
- Lower memory requirement for the code
- Correction of errors in the code
- Better readability of the code



Choose the correct answer.

Question

In which of the following situations can a constructor be invoked?

- When an object is created
- When an object is assigned the value 0
- Only at the end of the code
- When the scope of the object is over



Choose the correct answer.

Question

A programmer writes a code snippet in which a set of three lines occurs ten times in different parts of the program. What programming concept should be used to shorten the code length?

- For loops
- Functions
- Arrays
- Classes



Choose the correct answer.

Question

The function given below takes a number "n" as the input and calculates the sum of first "n" natural numbers. Which of the following statements should be inserted in place of "???" to get the required output?

```
function sum(n)
{
    if (??)
        return 1
    else
        return (n + sum(n-1))
    end
}
```

- n equals 1
- n equals 2
- n>= 1
- n>1



Choose the correct answer

Question

Which of the following options gives the lower bound on running time for an algorithm?

- Best Case complexity of the algorithm
- Average Case complexity of the algorithm
- Worst Case complexity of the algorithm
- Number of iterations taking place in the algorithm



Choose the correct answer.

Question

Assume the following precedence (high to low). Operators in the same row have the same precedence.

(.)
* /
+ -
AND
OR

The precedence is from left to right in the expression for the operators with equal precedence.

Which of the following statements is TRUE about the output of the code statements given below?

```
integer a = 40, b = 35, c = 20, d = 10
print a * b / c - d
print a * b / (c - d)
```

- The outputs differ by 80.
- The outputs are the same.
- The outputs differ by 50.
- The outputs differ by 160.

 Choose the correct answer.

Question

A sorting mechanism uses the binary tree concept such that any number in the tree is larger than all the numbers in the sub-tree below it. What is this method called?

- Selection sort
- Insertion sort
- Heap sort
- Quick sort

 Choose the correct answer.

Question

The following operations are performed on an empty stack "A":

PUSH(1)
PUSH(2)
POP
PUSH(5)
PUSH(6)
POP

What will the stack contain after these operations?

(Note: The top of the stack is underlined in the options below.)

- 5 6
- 1 5
- 5 6
- 1 5

 Choose the correct answer.

Question

Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same address by using the key. What is this search mechanism?

- Linear search
- Binary search
- Hash coded search
- None of the above

 Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.

 Choose the correct answer

Question

Tricha needs to store a list of binary data. Which of the following data types should she use?

- Integer
- Float
- Character
- Boolean



Choose the correct answer.

Question

Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

- Run time is always more than the compile time.
- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.



Choose the correct answer.

Question

Which of the following is the lowest level format to which the computer converts a program in a higher language before execution?

- English code
- Machine code
- Assembly language
- System language



Choose the correct answer

Question

What is the name given to the function which has no memory or I/O side effects?

- Pure Function
- Subroutine
- Procedure
- Method

 Choose the correct answer.

Question

In an implementation of a linked list, each node contains data and address. Which of the following can the address field possibly contain?

- Address of the next node in sequence
- Its own address
- Address of the last node
- Address of the first node

 Choose the correct answer

Question

Find out the index of an empty Hash Table where a key with value 25 needs to be inserted using Quadratic Probing with $c1=1$, $c2=9$. The size of table is 5 and the primary hash function used is $(k \bmod m)$ where $k = \text{key}$, $m = \text{size of Hash Table}$.

- 0
- 1
- 15
- Data Insufficient

 Choose the correct answer.

Question

What will happen if some indentations are made in some statements of a code written in C++?

- Faster execution of the code
- Lower memory requirement for the code
- Correction of errors in the code
- Better readability of the code



Choose the correct answer

Question

Which of the following accessibility modes can be the specifier of a top level class?

1. Private
2. Protected
3. Public
4. No modifier

Only 3

- Only 4
- Both 1 and 3
- Both 2 and 3
- Both 3 and 4



Choose the correct answer.

Question

A programmer prepares a questionnaire with "true or false" type of questions. He wants to define a data type that stores the responses of the candidates for the questions. Which of the following is the most suited data type for this purpose?

- Integer
- Boolean
- Float
- Character

Passage

```
function modify(a,b)
{
    integer c, d = 2
    c = a*d + b
    return c
}

function calculate( )
{
    integer a = 5, b = 20, c
    integer d = 10
    c = modify(a, b);
    c = c + d
    print c
}
```

 Choose the correct answer.

Question

Consider the code given in the 'Passage'. Assume that "a" and "b" are passed by value. What will the output of the program be when the function *calculate()* is executed?

- 80
- 40
- 32
- 72



Choose the correct answer.

Question

How many nodes does a complete binary tree with 5 levels have, if the root is considered to be at level 1?

- 15
- 25
- 63
- 31



Choose the correct answer.

Question

How many nodes does a full binary tree with "n" non-leaf nodes contain?

- $\log n$
- $n + 1$
- $2n + 1$
- $2n$



Choose the correct answer.

Question

A programmer mistakenly writes "gor" instead of the keyword "for" used in loops, while writing a program in C++. What will this result in?

- The code would not compile.
- The code would give an error while execution.
- The code may work for some inputs and not for the others.
- The code would not create any problem.

Passage

```
function main()
{
    automatic variable var
    print var
}
```



Choose the correct answer:
A pseudo-code is used which is self explanatory.

Question

What will be the output generated when the given code is executed?

- 0
- 1
- Garbage Value
- This code will generate a compile time error

 Choose the correct answer.

Question

A programmer writes a sorting algorithm that takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

- All numbers in one list are more than 100 while in the other are less than 100.
- The ordering of numbers with respect to the magnitude in the two lists has different properties.
- One list has all negative numbers while the other has all positive numbers.
- One list contains 0 as an element while the other does not.



Choose the correct answer.

Question

What is implied by the argument of a function?

- The variables passed to the function when it is called
- The value that the function returns on execution
- The execution code inside the function
- Return type of the function

Passage

```
function MyBinarySearch(array arr, integer low, integer high, integer item)
{
    if ( low > high )
    {
        return -1
    }

    integer mid = (low + high)/2

    if ( arr[mid] equals item )
    {
        return mid
    }
    else if ( arr[mid] > item )
    {
        return //missing statement 1
    }
    else
    {
        return //missing statement 2
    }
}
```



Choose the correct answer:
A pseudo-code is used which is self explanatory.
// in pseudo code refers to comment

Question

Harshul uses the given code to implement Binary Search recursively. Find the statement that will replace missing statement 2 in the given code such that it works efficiently.

- MyBinarySearch(arr, mid+1, high, item)
- MyBinarySearch(arr, low+1, mid-1, item)
- MyBinarySearch(arr, low, mid-1, item)
- MyBinarySearch(arr, mid+1, high-1, item)



Choose the correct answer.

Question

What will happen if some indentations are made in some statements of a code written in C++?

- Faster execution of the code
- Lower memory requirement for the code
- Correction of errors in the code
- Better readability of the code



Choose the correct answer

Question

A complete graph contains 10 nodes. What is the total number of edges

45

50

90

99



Choose the correct answer.

Question

In which of the following situations can a constructor be invoked?

When an object is created

When an object is assigned the value 0

Only at the end of the code

When the scope of the object is over

Question

A programmer wants the program given below to print the largest number out of three numbers entered by the user.

```
int number1, number2, number3, temp;  
input number1, number2, number3;  
  
if (number1>number2)  
temp = number1  
else  
temp = number2  
end if  
  
if (??) // Statement 1  
temp = number3  
end if  
print temp
```

Which of the following should be substituted in place of "???" in Statement 1 in the code?

- number3>number2
- number3>temp
- number3<temp
- number3>number1



Choose the correct answer

Question

Ritika was asked to include concrete objects in her project. Which of the following statements clearly states about the concrete objects?

- All the objects created as the instance of a class
- Objects created using the new keyword
- Variables and objects that follow the concrete keyword
- Objects created under conditional statements

 Choose the correct answer.

Question

A sorting mechanism uses the binary tree concept such that any number in the tree is larger than all the numbers in the sub-tree below it. What is this method called?

- Selection sort
- Insertion sort
- Heap sort
- Quick sort

 Choose the correct answer.

Question

A queue is implemented as a singly linked linked-list. Each node has an element and a pointer to another node. The *Rear* and the *Front* contain the addresses of the rear and the front nodes, respectively. What can be inferred about the linked list if the condition (*rear* *is equal* *front*) is true?

- It has no elements
- It has one element
- There is an error
- None of the above

 Choose the correct answer.

Question

How many nodes does a full binary tree with "n" non-leaf nodes contain?

- $\log n$
- $n + 1$
- $2n + 1$
- $2n$

 Choose the correct answer.

Question

A sorting algorithm traverses through a list, comparing adjacent elements and switching them under certain conditions. What is it called?

- Insertion sort
- Heap sort
- Quick sort
- Bubble sort

 Choose the correct answer

Question

Which of the following data types does not belong to the category of abstract data types?

- Hashtable
- Set
- Object
- Stack

 Choose the correct answer.

Question

Which of the following describes a tree?

- An unconnected graph
- A connected graph
- A connected acyclic graph
- A complete graph

 Choose the correct answer.

Question

Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

- Run time is always more than the compile time.
- Compile time is always more than the run time.
- Compile time is a function of run time.
- A program needs to be compiled once but can be run several times.

 Choose the correct answer.

Question

Two programmers independently write a program to find the mass of one mole of water, that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:
integer hydrogen, oxygen, water // Code A

The second programmer defines three quantities as:
integer a, b, c // Code B

Which of the two is a better programming practice and why?

- Code B is better because variable names are shorter.
- Code A is better because the variable names are understandable and non-confusing.
- Code A would run correctly while Code B would give an error.
- Code B would run correctly while Code A would give an error.

Passage

Pragya sells footballs. She has a large container to store footballs which is closed from below. Footballs are piled one on top of the other in the box. When new balls are supplied, Pragya puts the balls in the box from the top. When a customer buys a ball, she delivers the ball at the top of the pile to the customer. Each ball has a code. She wants to store the ball codes in a data structure to keep track of her inventory. What data-structure should she use?

 Choose the correct answer

Question

- Queue
- Stack
- Array
- Graph