

D. 8

Q 8 A polynomial, $f(x)$ is represented by the following array:

{ 2, 4, 6, 3, 1 }

What is the sum of coefficients of x^3 and x^1 ?

Ops: A. 7

B. 6

C. 6

D. 9

Q 9 If there is a data structure in which the relationship of adjacency is not maintained, be applied to the data structure?

A. None of the mentioned options

C. Head recursion

D. Tail recursion



Q 5 Consider an undirected graph, G with four vertices. The adjacency matrix of the graph is shown below

1 0 1 1

0 0 1 1

1 1 1 0

1 1 0 0

Find the number of self loops in the undirected graph, G.

Ops: A. 0

B. 2

C. 3

D. 1

Q 6 Why open addressing provides better cache performance than chaining?

Ops: A. 7

B. 6

C. 6

D. 9

[reset answer](#)

Q 9 If there is a data structure in which the relationship of adjacency is not maintained between the data items, then which of the following operations is **not** applied to the data structure?

Ops: A. Traverse

B. Display

C. Sort

D. Search



Q 10 Consider an array of containing elements of data type X. It is given that the difference between the address of the 11th and 14th element is 3 bytes. Identify X

Ops: A. Character type

B. Float type

C. Integer type

D. Double float

[reset answer](#)

[reset answer](#)

Q 6 Why open addressing provides better cache performance than chaining?

1. In open addressing, everything is stored in the same table
2. In chaining keys, are stored using a linked list

Choose the correct answer from the options given below.

Ops: A. Both 1 and 2 are false

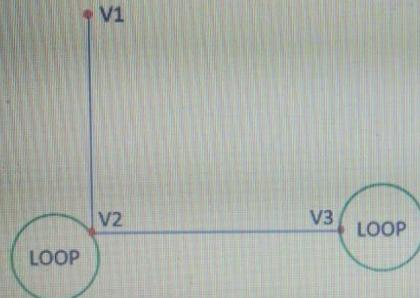


B. Only 2 is true

C. Only 1 is true

D. Both 1 and 2 are true

Q 7 Find out the sum of the degree of vertices in the pseudograph as shown in the image.



- Ops:
- A. 12
 - B. 16
 - C. 4
 - D. 8

Q 8 A pseudograph $f(v)$ is represented by the following array:

C. Only 4

D. Only 1

reset answer

Q 4 Moneta is writing a program to perform insert operation in a binary search tree using recursion. Which of the following types of recursion will she be her program?

- Ops:
- A. Both A and B
 - B. None of the mentioned options
 - C. Head recursion
 - D. Tail recursion

Q 5 Consider an undirected graph, G with four vertices. The adjacency matrix of the graph is shown below.

1 0 1 1

0 0 1 1

1 1 1 0

1 1 0 0

Find the number of self loops in the undirected graph, G.

- Ops:
- A. 0
 - B. 2

Q 25 What will be the output of the following pseudocode?

```
1. Integer p, q
2. Set q = 5
3. for (each p from 7 to 10)
4.     if (q < 7)
5.         p = p + 6
6.         p = p + q - 4
7.     end for
8. Print q
```

- Ops:
- A. 16
 - B. 15
 - C. 14
 - D. 13

D. 666666

[reset answer](#)

[Submit and Logout](#)

Q 23 What will be the output of the following pseudocode?

```
1. Integer i
2. Set i = 45
3. if(i mod 2 EQUALS 0 OR i mod 2 AND i)
4.     print i mod 2
5. else
6.     print i
7. end if
```

[Note: mod finds the remainder after the division of one number by another. For example, the expression "5 mod 2" would evaluate to 1 because 5 divided by 2 leaves a quotient of 2 and a remainder of 1
||: Logical OR - The logical OR operator (||) returns the Boolean value TRUE(or 1) if either or both operands is TRUE and returns FALSE(or 0) otherwise
The logical AND operator (&&) returns the boolean value true(or 1) if both operands are true and return false (or 0) otherwise]

- Ops:
- A. 2
 - B. 45
 - C. 1
 - D. 0

Q 24 What will be the output of the following pseudocode?

What is the sum of coefficients of x^3 and x^1 ?

Ops: A. 7

B. 6

C. 6

D. 9

[reset answer](#)

Q 9 If there is a data structure in which the relationship of adjacency is not maintained between the data items, then which of the following operations is **not** applied to the data structure?

Ops: A. Traverse

B. Display

C. Sort

D. Search

Q 10 Consider an array of containing elements of data type X. It is given that the difference between the address of the 11th and 14th element is 3 bytes. Identify X.

Ops: A. Character type

B. Float type

C. Integer type

D. Double float

min sec

Q 21 What will be the output of the following pseudocode?

```
1. character p[20], b[20]
2. set p[20] = "Respect your elders"
3. Integer k
4. set k = 0
5. while(p[k] not equals null character AND p[k] not equals space)
6.     b[k] = p[k]
7.     k = k + 1
8. end while
9. set k=0
10. while(b[k] not equals null character)
11.     print b[k]
12.     k = k + 1
13. end while
```

[Note: &&: Logical AND - The logical AND operator (&&) returns the Boolean value true (or 1) if both operands are true and return false (or 0) otherwise]

Ops: A. Respect elders

B. R

C. elders

D. Respect

In his seminal 1960s book Operating Manual for Spaceship Earth, R. Buckminster Fuller posits that if we treated our planet as a mechanical vehicle, we would treat it much differently than we do.

- Ops: A. Inference
B. Judgement
C. Fact

Q 25 The sentences given below form a coherent passage when arranged logically. Choose the option which gives the correct sequence.

- A. After hooking yourself to the end of a human chain, you worry about whether there will be enough tickets, whether you will get seats together.
B. Even if the weather cooperates, there is still a thirty-minute drive to the theatre down a congested highway.
C. Leaving a home equipped with a TV and a video recorder isn't an attractive idea on a humid, cold, or rainy night.
D. Followed by the hassle of looking for a parking space.

- Ops: A. ABDC
B. DCBA
C. CBDA
D. ABCD

Read the passage given below and answer the questions that follow.

Complete the passage by choosing the most suitable word/phrase from the options to fit the corresponding gap.

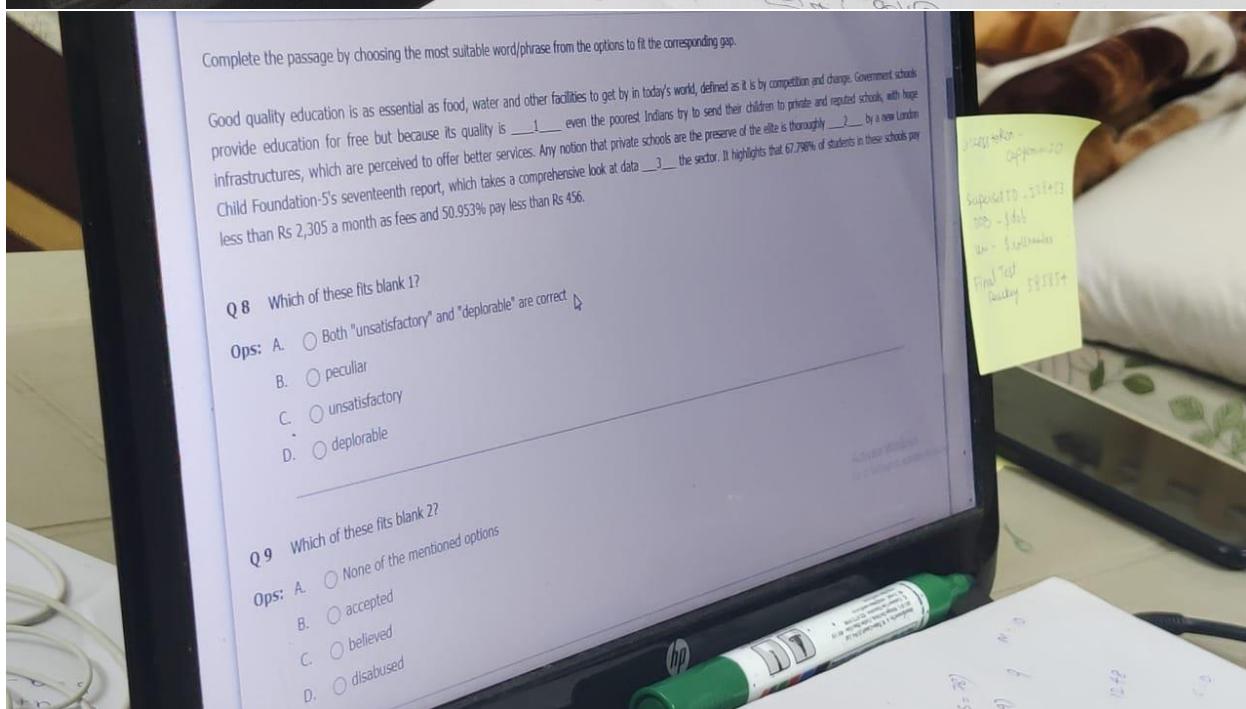
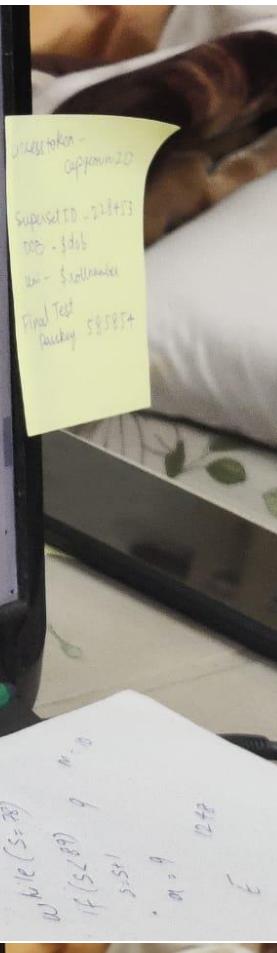
Good quality education is as essential as food, water and other facilities to get by in today's world, defined as it is by competition and change. Government schools provide education for free but because its quality is 1 even the poorest Indians try to send their children to private and reputed schools with huge infrastructures, which are perceived to offer better services. Any notion that private schools are the preserve of the elite is thoroughly 2 by a new London Child Foundation's seventeenth report, which takes a comprehensive look at data 3 the sector. It highlights that 67.78% of students in these schools pay less than Rs 2,305 a month as fees and 50.953% pay less than Rs 456.

Q 8 Which of these fits blank 1?

- Ops: A. Both "unsatisfactory" and "deplorable" are correct
B. peculiar
C. unsatisfactory
D. deplorable

Q 9 Which of these fits blank 2?

- Ops: A. None of the mentioned options
B. accepted
C. believed
D. disabused



- B. ABCD
C. BCAD
D. CBDA

reset answer

Q7 A sentence is broken into the following parts. Mark the option containing the correct sequence of these parts to get the complete sentence.

1. Percentage goes up as
2. A mathematical necessity
3. The reason is that if unnecessary
4. Words are reduced, the verb

- Ops: A. 4312
B. 3412
C. 1234
D. 4321

Complete the passage by choosing the most suitable word/phrase from the options to fit the corresponding gap.

Good quality education is as essential as food, water and other facilities to get by in today's world, defined as it is by competition and change. Government schools provide education for free but because its quality is 1 even the poorest Indians try to send their children to private and reputed schools, with huge infrastructures, which are perceived to offer better services. Any notion that private schools are the preserve of the elite is thoroughly 2 by a new London Child Foundation-5's seventeenth report, which takes a comprehensive look at data 3 the sector. It highlights that 67.798% of students in these schools pay less than Rs 2,305 a month as fees and 50.953% pay less than Rs 456.



Welcome Sandhya Vineetha Sanam

26 : 25

Complete the passage by choosing the most suitable word/phrase from the options to fit the corresponding gap.

Good quality education is as essential as food, water and other facilities to get by in today's world, defined as it is by competition and change. Government schools provide education for free but because its quality is 1 even the poorest Indians try to send their children to private and reputed schools, with huge infrastructures, which are perceived to offer better services. Any notion that private schools are the preserve of the elite is thoroughly 2 by a new London Child Foundation-5's seventeenth report, which takes a comprehensive look at data 3 the sector. It highlights that 67.798% of students in these schools pay less than Rs 2,305 a month as fees and 50.953% pay less than Rs 456.

Q8 Which of these fits blank 1?

- Ops: A. Both "unsatisfactory" and "deplorable" are correct
B. peculiar
C. unsatisfactory
D. deplorable

12/28/2020 -
Suppose 20
100 - 100
100 - 100
Final Test
Society 58587

file (5-2)
W file (5-2)
if (5-2)
5-51
n = 9
12/28

12/28/2020 -
Suppose 20
100 - 100
100 - 100
Final Test
Society 58587

- Ops:**
- A. must get the mosty
 - B. The woman who
 - C. serious punishment.
 - D. has done such a heinous crime

Q 4 Mark the option which best expresses the given sentence in Indirect speech.

She said to her mother, 'Be calm and listen to what I am saying.'

- Ops:**
- A. She told her mother to be calm and listen to what she will say.
 - B. She urged her mother to be calm and listen to what she was saying.
 - C. She told her mother to be calm and listen to what she is saying.
 - D. She urged her mother be calm and listen to what I am saying.

.. the option best suited to replace the underlined portion of the sentence given below.
..... exceed more than five hundred words.

AON

Welcome Sandhya Vineetha Sanam

26 : 38

Complete the passage by choosing the most suitable word/phrase from the options to fit the corresponding gap.

Good quality education is as essential as food, water and other facilities to get by in today's world, defined as it is by competition and change. Government schools provide education for free but because its quality is 1 even the poorest Indians try to send their children to private and regular schools, with huge infrastructures, which are perceived to offer better services. Any notion that private schools are the preserve of the elite is thoroughly 2 by a new London Child Foundation's seventeenth report, which takes a comprehensive look at data 3 the sector. It highlights that 62.79% of students in these schools pay less than Rs 2,305 a month as fees and 50.95% pay less than Rs 456.

Q 8 Which of these fits blank 1?

- Ops:**
- A. Both "unsatisfactory" and "deplorable" are correct.
 - B. peculiar
 - C. unsatisfactory
 - D. deplorable

Q 9 Which of these fits blank 2?

- Ops:**
- A. None of the mentioned options
 - B. accepted

1. Unsat
2. Peculiar
3. Deplorable
4. Accepted

1. 2
2. 3
3. 4
4. 1

- Ops: A. She told her mother to be calm and listen to what she was saying.
B. She urged her mother to be calm and listen to what she was saying.
C. She told her mother to be calm and listen to what she is saying.
D. She urged her mother be calm and listen to what I am saying.

reset answer

Q 5 Mark the option best suited to replace the underlined portion of the sentence given below.
The short story should not exceed more than five hundred words.

- Ops: A. exceed
B. exceed over
C. more exceed
D. exceed than

Q 6 A sentence is broken into the following parts. Mark the option containing the correct sequence of these parts to get the complete sentence.
That your work on these
left to remind you

A sentence is broken into the following parts. Mark the option containing the correct sequence of these parts to get the complete sentence.
That your work on these
left to remind you

calculus
separation
calculus
separation
calculus
separation
calculus
separation



Welcome Sandhya Vineetha Sanam

28 : 13

Q 3 Which part of the sentence given below has an error in it?

The woman who / has done such a heinous crime / must get the mostly / serious punishment.

- Ops: A. must get the mostly
B. The woman who
C. serious punishment.
D. has done such a heinous crime

Q 4 Mark the option which best expresses the given sentence in Indirect speech.

She said to her mother, 'Be calm and listen to what I am saying.'

Told her mother to be calm and listen to what she will say.

Told her mother to be calm and listen to what she was saying.

Told her mother to be calm and listen to what she is saying.

A photograph of a handwritten solution to a programming problem. The page contains the following text:

D. 03

Q 24 What will be the output of given pseudocode?

1. Integer k, m
2. Set k = 1, m = 9
3. if(k + 8 / m)
4. print m
5. m = m + 1
6. if(k * 8 / m)
7. print k
8. k = k - 1
9. for(each k from m to 8) decrease k by 1 in each iteration
10. print k
11. End for

What will be the output of following code for per = 75 and marks = 257

Ops: A. 9 10 9 9
B. 9 10 8 9
C. 9 10 9 8
D. 9 10 9 10

A green HP marker lies horizontally across the bottom of the page.

i Important Instructions & Guidelines

30 questions, 1 mark each

1 English Communication

Q 1 Mark the option containing the sentence that is grammatically correct.

Ops:

- A. Automation must be used to feed the drivers of change.
- B. Automation must be using to feed the drivers of change.
- C. Automation must have been using to feed the drivers of change.
- D. Automation must use to feed the drivers of change.

The sentence given below has an error in it?

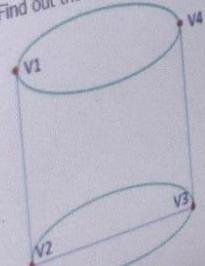
... and do so many positive things.

- B. Only 1 and 3
- C. Only 1 and 2
- D. All 1, 2, and 3

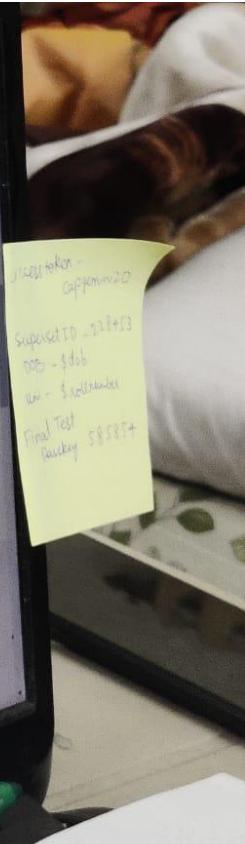
Q 5 Consider an array A = {2, 5, 9, 12, 3, 4, 3, 4, 3, 19}. While sorting the array A using count sort, what will be the size of the dynamically created array, in which the number of occurrences of each element are present?

- Ops:
- A. 19
 - B. 20
 - C. None of the mentioned options
 - D. 5

Q 6 Find out the sum of the degree of vertices in the graph as shown in the image.



J16231 taken -
Captured 20
Superset ID - 218413
DBB - \$1000
Sum - \$1000
Final Test
Ranking 585874



reset answer

Q 8 Heap is more efficient for implementing priority queues than a linked list or an array as it supports the following operations in $O(\log n)$ time.

1. insert()

2. extractMax()

3. decreaseKey()

[NOTE - Insert(): Inserts a new key

extractMax(): Removes the maximum element from MaxHeap

decreaseKey(): Decreases value of key.]

- Ops:
- A. Only 1 and 3
 - B. Only 1 and 2
 - C. Only 2 and 3
 - D. All 1, 2 and 3

D. 3

Q 24 What will be the output of given pseudocode?

```
1. Integer k, m
2. Set k = 1, m = 9
3. if(k + 8 / m)
4.     print m
5.     m = m + 1
6. if(k * 8 / m)
7.     print k
8.     k = k - 1
9. for(each k from m to 8) decrease k by 1 in each iteration
10.    print k
11. End for
```

- Ops:
- A. 9 10 9 9
 - B. 9 10 8 9
 - C. 9 10 9 8
 - D. 9 10 9 10

User token -
Capmon20

Superset ID : 229+P3
185 - 3dbb

Un - \$ 321e0000

Final Test
Passkey 585884

Activate Windows
Go to Settings to activate Windows

(35/38)

- B. A is a sparse matrix
- C. A is a sparse and diagonal matrix
- D. A is a dense matrix

[reset answer](#)

Q 10 If the speed of packets sent by a server is faster than the speed of receiver, then which of the following would be the most suitable for synchronization?

- Ops:
- A. B-tree
 - B. Queue
 - C. Quad tree
 - D. Binary tree

15 questions, 1 mark each

2 Algorithms

13 out of 15 questions attempted. Review?

[Submit and Logout](#)Activate Windows
Go to Settings to activate Windows

Q14 What will be the output of given pseudocode?

1. Integer s
2. Set s = 78
3. while(s EQUALS 78)
4. if(s < 89)
5. s = s + 1
6. continue with next iteration
7. print "welcome"
8. else
9. jump out of the loop
10. end if
11. end while

- Ops:
- A. None of the mentioned options
 - B. It will print 'welcome' only one time
 - C. It will print nothing
 - D. It will print 'welcome' 78 times

What will be the output of following pseudocode?



D.

Q 24 What will be the output of given pseudocode?

1. Integer k, m
2. Set k = 1, m = 9
3. if($k + 8 / m$)
4. print m
5. $m = m + 1$
6. if($k * 8 / m$)
7. print k
8. $k = k - 1$
9. for(each k from m to 8) decrease k by 1 in each iteration
10. print k
11. End for

- Ops:
- A. 9 10 9 9
 - B. 9 10 8 9
 - C. 9 10 9 8
 - D. 9 10 9 10

Classmate -
Sapna 20
Subject - 22143
Page - 343
Date - 10/10/2018
Final Test
Writing PRACTICE

15/10/18

D. 6

reset answer

Q 19 What will be the output of the following pseudocode for $a = 37$

```
1. Integer fun(Integer a)
2.   Integer arr[] = {10, 7, 2, 6, 1, 2, 3}
3.   Integer p, sum = 0
4.   for (each p from 0 to a - 1)
5.     sum = sum + arr[a]
6.   End for
7.   return sum
8. End function fun()
```

- Ops: A. 20
B. 18
C. 21
D. 15

the output of the following pseudocode?
in C

Q 7 The minimum number of multiplications and additions required to evaluate the polynomial $P = 4x^3 + 3x^2 - 15x + 45$ is:

- Ops: A. 4 & 2
B. 3 & 4
C. 3 & 3
D. 6 & 3

Q 6 What will be the probability of selecting a random node from a given Singly Linked List?
(Assume that there are N nodes in the list)

- Ops: A. $2(N-1)/N$
B. $N/2(N-1)$
C. $1/N$
D. $2N - 1$

Q 5 Consider a complete undirected graph with vertex set $\{0, 1, 2, 3, 4\}$. Entry W_{ij} in the matrix W below is the weight of the edge $\{i, j\}$. What is the minimum possible weight of a spanning tree T in this graph such that vertex 0 is a leaf node in the tree T ?

$$W = \begin{pmatrix} 0 & 1 & 8 & 1 & 4 \\ 1 & 0 & 12 & 4 & 9 \\ 8 & 12 & 0 & 7 & 3 \\ 1 & 4 & 7 & 0 & 2 \\ 4 & 9 & 3 & 2 & 0 \end{pmatrix}$$

- Ops: A. 8
B. 7
C. 9
D. 10

Q 8

Q 8 Suppose a queue is implemented using a linked list and its front node and rear nodes are tracked by two reference variables. Which of these reference variables will change during an insertion into a NONEMPTY queue?

- Ops: A. Both will change
B. Only the rear will change
C. Only the front will change
D. None of them will change

Q 4 How much time will be required to generate all the connected components in an undirected graph G with 'n' vertices and 'e' edges when the graph is represented by an adjacency list?

- Ops: A. $O(e)$
B. $O(e+n)$
C. $O(n)$
D. $O(e^2)$

Q 1 Let A, B, C, D, E be sorted sequences having lengths 20, 24, 30, 35, 50 respectively, they are to be merged into a single sequence by merging together two sequences at a time. How many comparisons are needed in the worst case by the optimal algorithm?

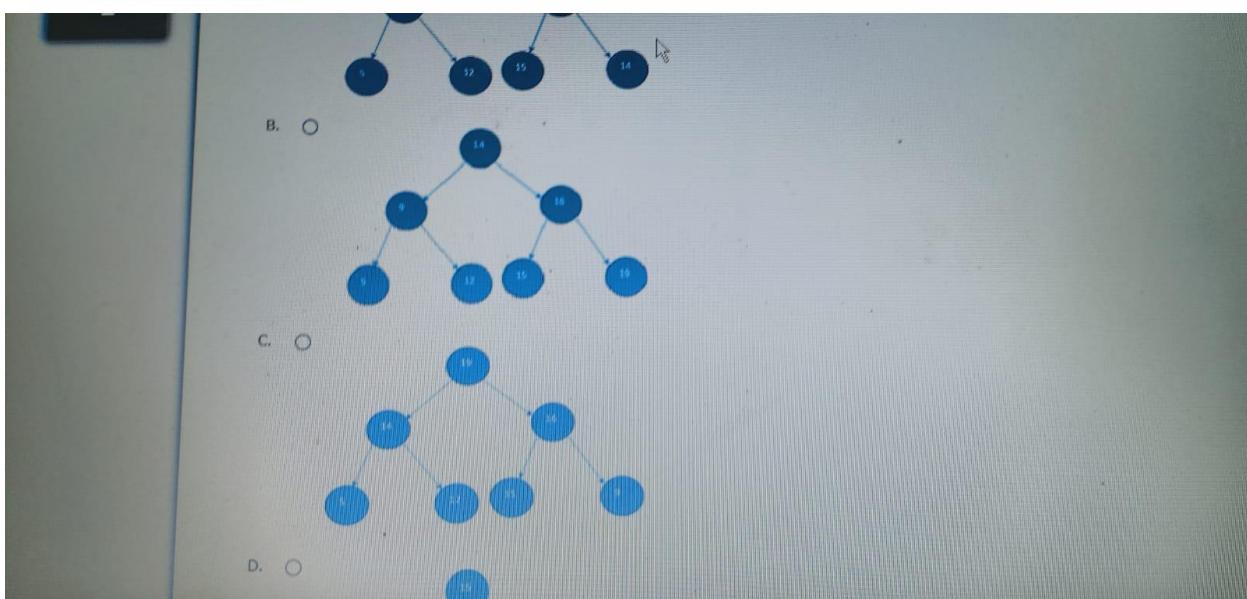
- Ops: A. 423
B. 358
C. 544
D. 256

Q 3 If a node having two children is deleted from a binary tree, it is replaced by its:

- Ops: A. Inorder successor
B. Inorder predecessor
C. Preorder predecessor
D. None of the mentioned options

Q 3 Which of the following graph analysis algorithms would be applied for finding shortest paths in a weighted graph (positive or negative edge weights) and can also be used for finding transitive closure of a relation R?

- Ops: A. Meshy's algorithm
B. Prim's algorithm
C. Floyd's algorithm
D. Dijkstra's algorithm



```
Integer n
if(g>f)
for(n=f;n<g;n=n+1)
sum=sum+n
End for loop
else
print error message
print sum
a) 21
b) 15
c) 9
d) 6
```

Ans: A

15) Consider a hash table with 9 slots. The hash function is $h(k) = k \bmod 9$. The collisions are resolved by chaining. The following 9 keys are inserted in the order: 5, 28, 19, 15, 20, 33, 12, 17, 10. The maximum, minimum, and average chain lengths in the hash table, respectively, are

- a) 3, 0, and 1
- b) 3, 3, and 3
- c) 4, 0, and 1
- d) 3, 0, and 2

Ans: A

16) You have an array of n elements. Suppose you implement a quick sort by always choosing the central element of the array as the pivot. Then the tightest upper bound for the worst case performance is:

- a) $O(n^2)$
- b) $O(n \log n)$
- c) $O(n \log n)$
- d) $O(n^3)$

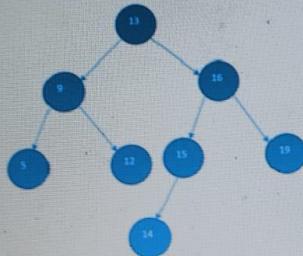
Ans: A

17) Let G be a graph with n vertices and m edges. What is the tightest upper bound on the running time on Depth First Search of G ? Assume that the graph is represented using adjacency matrix.

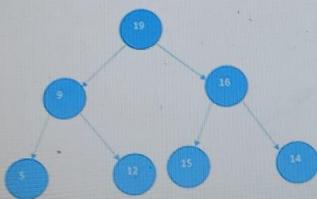
- a) $O(n)$
- b) $O(m+n)$
- c) $O(n^2)$
- d) $O(mn)$

Ans: C

Q 10 If you have the following BST and you need to delete 13 from the tree, then which of the following is correct?



Ops: A.



Q 9 Match the following for a B-tree of order m.

- A. Maximum number of non-empty children for each non-leaf node
- B. Minimum number of non-empty children for each non-root
- C. Maximum number of keys in each non-root

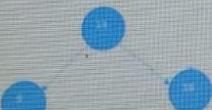
1. m

2. m/2

3. m-1

- Ops: A. A-3, B-2, C-1
B. A-1, B-2, C-3
C. A-2, B-1, C-3
D. A-2, B-3, C-1

Q 10 If you have the following BST and you need to delete 13 from the tree, then which of the following is correct?



D. Queue

2

Q 4 Consider a stack of letters. The stack is allocated 4 memory cells.
STACK: A, C, B, ...

The following operations are performed on the stack-

- i) POP (STACK, ITEM)
- ii) POP (STACK, ITEM)
- iii) POP (STACK, ITEM)
- v) PUSH(STACK, M)
- vi) POP (STACK, ITEM)

What will be printed after the above operations are performed?

Ops: A. A C B M

B. B C A M

C. M B C A

D. None of the mentioned options

Q 5 A type of linked list, say X consists of nodes that is divided into three parts:

The first part contains the address of the previous node.

2

Q 20 What will be the output of the following pseudocode?

1. Integer a, b, c
2. Set b = 2, a = 2
3. c = a ^ b
4. Print c

[Note- ^ is the bitwise exclusive OR operator that compares each bit of its first operand to the corresponding bit of its second operand. If one bit is 0 and other bit is 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0]

Ops: A. 2

B. 4

C. 0

D. 6

Q 21 What will be the output of the following pseudocode for a = 22?

1. Integer compact(Integer a)
2. if(a <= 45)

2

```
7.   b = arr[1]
8.   c = arr[0]
9. end if
10. for(each a from 2 to 9)
11.     if(b < arr[a])
12.       c = b
13.       b = arr[a]
14.     else if(c < arr[a])
15.       c = arr[a]
16.     end if
17. end for
18. print c
```

Which of the following options is correct?

- Ops:
- A. The output of given pseudocode is largest element of given array
 - B. The output of given pseudocode is second largest element of given array
 - C. The output of given pseudocode is smallest element of given array
 - D. The output of given pseudocode is second smallest element of given array

2

Q 19 What will be the output of the following pseudocode?

```
1. Integer arr[]={10, 20, 30, 40, 5}
2. Integer a, s
3. Set s = 0
4. Set a = arr[1] + arr[2]
5. Print a
```

- Ops:
- A. 50
 - B. 40
 - C. 25
 - D. 5

Q 20 What will be the output of the following pseudocode?

```
1. Integer a, b, c
2. Set b = 2, a = 2
3. c = a ^ b
4. Print c
```

1

2

```
1. Integer arr[5], a, b, c
2. Set arr[5] = {11, 13, 4, 50, 77}
3. if(arr[0] > arr[1])
4.     b = arr[0]
5.     c = arr[1]
6. else
7.     b = arr[1]
8.     c = arr[0]
9. end if
10. for(each a from 2 to 9)
11.     if(b < arr[a])
12.         c = b
13.         b = arr[a]
14.     else if(c < arr[a])
15.         c = arr[a]
16.     end if
17. end for
18. print c
```

Which of the following options is correct?

Ops: A. The output of given pseudocode is largest element of given array

Q 15 What will be the output of the following pseudocode?

```
1. Integer a, b, c
2. Set b = 3, a = 5, c = 1
3. if (b < a)
4.     b = a
5. End If
6. for(each b from 0 to (1^2^3))
7.     b = b + 1
8. End for
9. Print b
```

[Note- ^ is the bitwise exclusive OR operator that compares each bit of its first operand to the corresponding bit of its second operand. If one bit is other bit is 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0]

Ops: A. 6
B. 5
C. 2
D. 1

2

Q 17 What will be the output of the following pseudocode?

```

1. Integer a,b
2. Set a = 15, b = 7
3. a = a mod (a - 3)
4. b = b mod (b - 3)
5. a = a mod 1
6. b = b mod 1
7. Print a + b

```

[Note- mod finds the remainder after the division of one number by another. For example, the expression "5mod 2" would evaluate to 1 because 5 divide leaves a quotient of 2 and a remainder of 1]

- Ops:**
- A. 0
 - B. 7
 - C. 15
 - D. 2

Q 18 Which of the following options is correct for the given pseudocode?

```

10. Else
11.     a = a ^ 1
12.     b = b ^ 1
13. End if
14. Print a + b + c

```

[Note: &- bitwise AND - The bitwise AND operator (&) compares each bit of the first operand to the corresponding bit of the second operand. If both bits are 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0

\wedge is the bitwise exclusive OR operator that compares each bit of its first operand to the corresponding bit of its second operand. If one bit is 0 and the other is 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0

If(x) gets executed if the value inside if(), i.e., x is not zero

||: Logical OR - The logical OR operator (||) returns the boolean value TRUE(or 1) if either or both operands is TRUE and returns FALSE(or 0) otherwise]

- Ops:**
- A. 2
 - B. 5
 - C. 3
 - D. 6

Q 6 With the following details given about a binary tree, find out the maximum number of nodes in the given tree.

height of a binary tree = 5

Nodes at level l = 4

- Ops:**
- A. 65
 - B. 59
 - C. 63
 - D. 62

1

Q 16 What will be the output of the following pseudocode?

```
1. Integer a, b, c
2. Set b = 2, a = 1
3. for(each c from 1 to 2)
4.     a = a*c
5.     b = b*c
6. End for
7. if ((1 & 4) || (1 ^ 1) || (2 ^ 3))
8.     b = a - 1
9.     a = a - 1
10. Else
11.     a = a ^ 1
12.     b = b ^ 1
13. End if
14. Print a + b + c
```

[Note: &- bitwise AND - The bitwise AND operator (&) compares each bit of the first operand to the corresponding bit of the second operand. If both bits are 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0]

[^] is the bitwise exclusive OR operator that compares each bit of its first operand to the corresponding bit of its second operand. If one bit is 0 and the other is 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0

2

Q 23 What will be the output of the following pseudocode?

```
1. Integer a, b, c
2. Set b = 5, a = 2, c = 2
3. if (b>a && a>c && c>b)
4.     b = a + 1
5. Else
6.     a = b + 1
7. End if
8. Print a + b + c
```

[Note-&&: Logical AND - The logical AND operator (&&) returns the Boolean value true(or 1) if both operands are true and return false (or 0) otherwise. If(x) gets executed if the value inside if(), i.e., x is not zero]

- Ops:
- A. 13
 - B. 2
 - C. 5
 - D. 26

2

- C. 10
D. 11

Q 13 What will be the output of the following pseudocode for a=2?

```
1. Integer fun(Integer a)
2.   if ( a > 0 )
3.     return a + fun(a - 1)
4.   Else
5.     return 0
6. End if
```

- Ops: A. 6
B. 5
C. 3
D. 4

Q 14 What will be the output of the following pseudocode for a = 50?

```
1. Integer fun(Integer a)
2.   Integer b, c
```

Q 21 What will be the output of the following pseudocode for a = 22?

```
1. Integer compact(Integer a )
2.   if(a <= 45)
3.     compact(compact(compact(compact(a*5+1))))
4.   end if
5.   return a*2
6. End function compact()
```

- Ops: A. 22
B. 45
C. 56
D. 44

- Ops: A. Link
B. element
C. data
D. pointer

Q 2 Consider an array $A = \{1, 2, 4, 6, 8, 10, 12\}$ and a key which is equal to 10. How many comparisons would be done to find the key element in the array using the binary search?

- Ops: A. 1
B. 5
C. 2
D. 3

Q 3 Which data structure is used while transforming infix expressions to postfix expression?

- Ops: A. Stack
B. Graph
C. Tree
D. Queue

2

Q 21 What will be the output of the following pseudocode for $a = 22$?

```
1. Integer compact(Integer a )
2.   if(a <= 45)
3.     compact(compact(compact(a*5+1)))
4.   end if
5.   return a*2
6. End Function compact()
```

- Ops: A. 22
B. 45
C. 56
D. 44

Q 22 What will be the output of the following pseudocode?

```
1. Integer a, b, c
2. Set b = 40, a = 20, c = 20
3. if (c > (c + a))
```

1

2

```
1. Integer a, b, c
2. Set b = 5, a = 2, c = 2
3. if (a)
4.     a = a - 1
5.     a = c
6. Else
7.     c = c + 1
8. End if
9. if (a = 1)
10.    c = c + 1
11. Else
12.    c = c - 1
13. End if
14. Print a + b + c
```

[Note: If(x) gets executed if the value inside if(), i.e., x is not zero]

- Ops:
- A. 15
 - B. 20
 - C. 10
 - D. 11

- D. 4

Q 14 What will be the output of the following pseudocode for a = 50?

```
1. Integer fun(Integer a)
2.     Integer b, c
3.     Set c = 10
4.     for (each b from 0 to a - 1)
5.         c = c - 1
6.     End for
7.     return c
8. End function fun()
```

- Ops:
- A. -30
 - B. -20
 - C. -10
 - D. -40

Q 15 What will be the output of the following pseudocode?

2

D. The output of given pseudocode is second smallest element of given array

Q 25 What would be the output of the following pseudocode?

```
1. Integer i, j, k
2. Set i = 12
3. j = i/5 + i/7
4. for(each p from 0 to 2)
5.     if(j>1 && j<4)
6.         k = j+1
7.     End if
8.     Jump out of the loop
9.     Print i+1
10. End for
11. Print k
```

- Ops: A. 7
B. 4
C. 2
D. 5

15 questions, 1 mark

2

Q 11 What would be the output of the given pseudocode?

```
1. Integer i, j, k
2. Set k = 8
3. for(each i from 1 to 1)
4.     for(each j from the value of i to 1)
5.         print k+1
6.     end for
7. end for
```

- Ops: A. 2
B. 9
C. 7
D. 8

Q 12 What will be the output of the following pseudocode?

```
1. Integer a, b, c
2. Set b = 5, a = 2, c = 2
3. if (a)
4.     a = a - 1
```

2

Q 21 Which one is correct for the given pseudocode?

```
1. Integer j
2. for(each j from 0 to 8)
3.   if( j EQUALS 4)
4.     if( j+1 EQUALS 5)
5.       continue with next iteration
6.     end if
7.   end if
8.   print j
9. end for
```

[Note: Continue- When a continue statement is encountered inside a loop, control jumps to the beginning of the loop for next iteration, skipping the exec of statements inside the body of the loop for the current iteration]

- Ops:
- A. it will print the numbers from 0 to 8
 - B. it will print all the numbers from 0 to 8 except the number 4
 - C. it will print all the numbers from 0 to 8 except the number 5
 - D. it will print the numbers from 0 to 4

2

Q 22 What will be the output of the following pseudocode?

```
1. Integer a, b, c
2. Set b = 40, a = 20, c = 20
3. if (c > (c + a))
4.   b = 0
5. Else
6.   a = a + 2
7.   c = a + 2
8. End if
9. if (c > (b+a))
10.   b = 0
11. Else
12.   a = a + 2
13.   c = a + 2
14. End if
15. Print a + b + c
```

- Ops:
- A. 60
 - B. 30
 - C. 39

Q 7 In which of the following applications, both Breadth First or Depth First Traversal can be used?

2

1. To test if a graph is Bipartite
2. Finding all nodes within one connected component
3. GPS Navigation systems

Choose the correct answer from the options given below.

Ops: A. Only 2 and 3

B. All 1, 2, and 3

C. Only 1 and 3

D. Only 1 and 2

Q 8 Which of the following is the correct reason that should be considered while selecting the correct technique of traversal for Ford-Fulkerson algorithm?

- I. Breadth First Traversal is preferred as it reduces worst case time complexity
- II. Depth First Traversal is preferred as it reduces worst case time complexity

Ops: A. Both I and II

B. Only I

C. Only II

D. Neither I nor II

1

Q 16 What will be the output of the following pseudocode?

```
1. Integer a, b, c
2. Set b = 2, a = 1
3. for(each c from 1 to 2)
4.     a = a*c
5.     b = b*c
6. End for
7. if ((1 & 4) || (1 ^ 1) || (2 ^ 3))
8.     b = a - 1
9.     a = a - 1
10. Else
11.     a = a ^ 1
12.     b = b ^ 1
13. End if
14. Print a + b + c
```

[Note: &- bitwise AND - The bitwise AND operator (&) compares each bit of the first operand to the corresponding bit of the second operand. If both bits are 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0]

[^] is the bitwise exclusive OR operator that compares each bit of its first operand to the corresponding bit of its second operand. If one bit is 0 and the other is 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0

2

```
10. Else
11.     a = a ^ 1
12.     b = b ^ 1
13. End if
14. Print a + b + c
```

[Note: &- bitwise AND - The bitwise AND operator (&) compares each bit of the first operand to the corresponding bit of the second operand. If both bits are 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0]

\wedge is the bitwise exclusive OR operator that compares each bit of its first operand to the corresponding bit of its second operand. If one bit is 0 and the other is 1, the corresponding result bit is set to 1. Otherwise, the corresponding result bit is set to 0

If(x) gets executed if the value inside if(), i.e., x is not zero

||: Logical OR - The logical OR operator (||) returns the boolean value TRUE(or 1) if either or both operands is TRUE and returns FALSE(or 0) otherwise]

- Ops:
- A. 2
 - B. 5
 - C. 3
 - D. 6

AON

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20 . 54

min sec

D. 3

Q4 Consider a linked list with 5 nodes. The address of the first node is 100. What will be the address of the third node?

- Ops:
- A. 102
 - B. 106
 - C. 104
 - D. Cannot be determined

Q5 What is the height of the given binary tree?

F

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24 . 25
min sec

1. Bubble sort
2. Insertion sort
3. Merge sort
4. Quick sort
5. Selection sort

Identify, which of the above sorting techniques are based on divide and conquer approach?

OpsA. Only 2, 3, 4 and 5
B. Only 1, 2 and 5
C. Only 3 and 4
D. Only 1, 3 and 4

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min sec

D. 3

Q.4 Consider a linked list with 5 nodes. The address of the first node is 100. What will be the address of the third node?

OpsA. 102
B. 106
C. 104
D. Cannot be determined

Q.5 What is the height of the given binary tree?

F

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24 : 12 min sec

Q 2 George is writing a program in which he wants to use the features of two way list and circular header list. Which of the following data structure would you recommend him?

OpsA. One way list
B. Two way circular list
C. Header list
D. Array

Q 3 Consider an array A={1,2,3} and an array B={-1,-2,-3}. An array C has been made by taking the sum of corresponding elements of A and B. (C also has three elements). Calculate the sum of the first and third element present in array C.

OpsA. 0
B. -6
C. 6
D. 3

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24 : 08 min sec

C. Header list
D. Array

Q 3 Consider an array A={1,2,3} and an array B={-1,-2,-3}. An array C has been made by taking the sum of corresponding elements of A and B. (C also has three elements). Calculate the sum of the first and third element present in array C.

OpsA. 0
B. -6
C. 6
D. 3

Q 4 Consider a linked list with 5 nodes. The address of the first node is 100. If the address of the third node is 110, what is the address of the fifth node?

D. None of the mentioned options

Q.7 Consider an array A with 5 elements:

A= { 2, 8, 5, 6, 1 }

Person X wants to sort the array in ascending order, for which he is using bubble sort.
How will the array look like after three passes?

OpsA. 21568

B. 12568

C. 25168

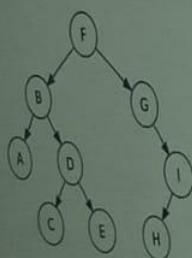
D. None of the mentioned options

Q.8 Calculate the number of labelled binary trees possible when the number of nodes is 4

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min sec

Q.5 What is the height of the given binary tree?



OpsA. 1

B. 3

C. 4

D. 2

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min sec

Q 5 What is the height of the given binary tree?

```
graph TD; F((F)) --> B((B)); F --> G((G)); B --> A((A)); B --> D((D)); D --> C((C)); D --> E((E)); G --> I((I)); G --> H((H))
```

OpsA. 1
B. 3
C. 4
D. 2

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min sec

Q 9 Consider a binary tree, T with 6 nodes: A, B, C, D, E and F

1. A is the root node.
2. B is the right child of A.
3. C is the left child of B.
4. D is the left child of A.
5. E and F are respectively left and right child of D.

Identify the correct statements

OpsA. T is a full binary tree
B. None of the mentioned options
C. T is a strict binary tree
D. T is a complete binary tree

AON

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25 : 25

min sec

Q 6 Consider the following arithmetic expression written in infix notation:

$$A + (B * C)$$

Find the postfix expression of the above expression.

OpsA. A B C + *

B. * + A B C

C. A B C * +

D. None of the mentioned options

Q 7 Consider an array A with 5 elements:

$$A = \{2, 8, 5, 6, 1\}$$

Person X wants to sort the array in ascending order, for which he is using bubble sort.

How will the array look like after three passes?
OpsA. 2 1 5 6 8

AON

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min sec

Q 9 Consider a binary tree, T with 6 nodes: A, B, C, D, E and F

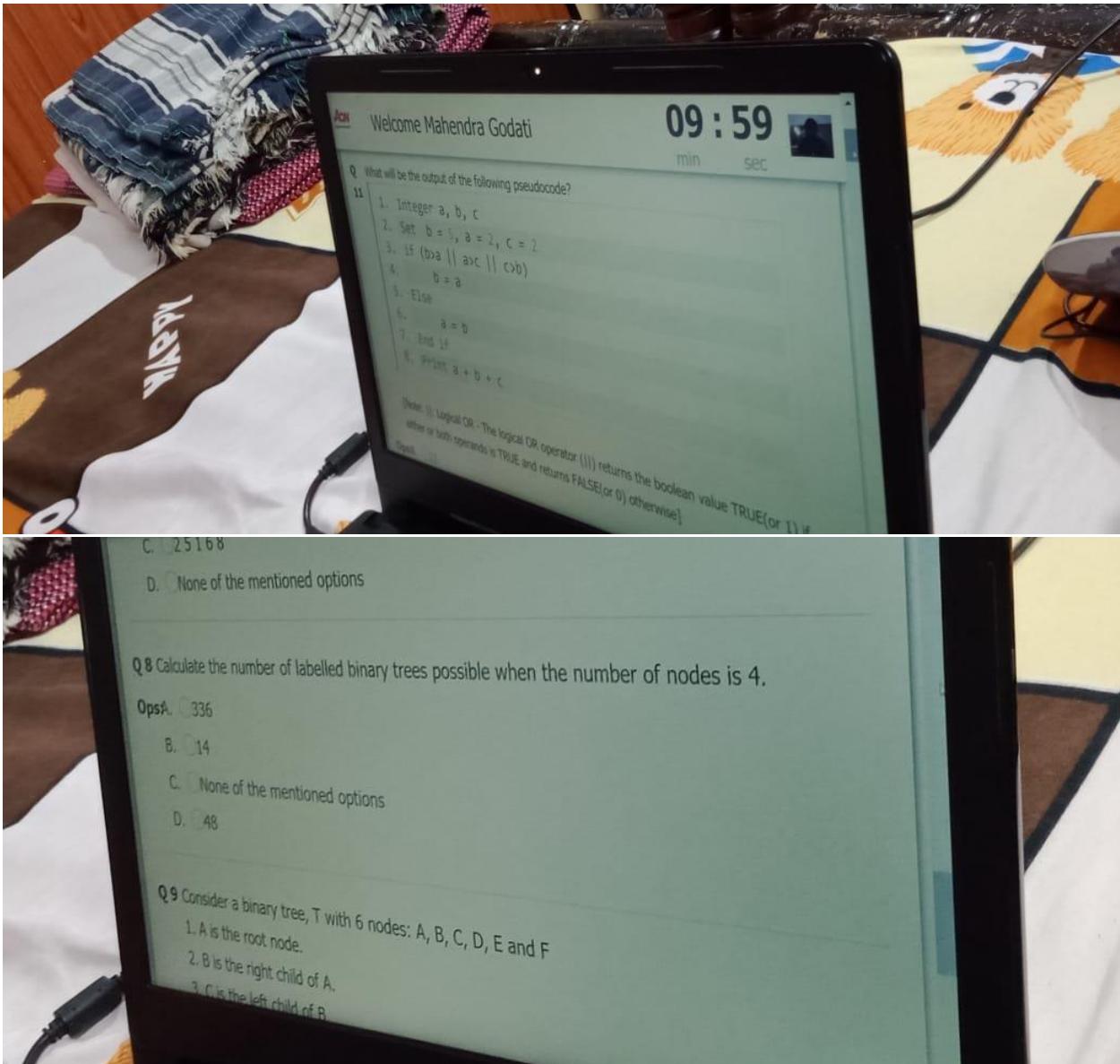
1. A is the root node.
 2. B is the right child of A.
 3. C is the left child of B.
 4. D is the left child of A.
 5. E and F are respectively left and right child of D.
- Identify the correct statements

OpsA. T is a full binary tree

B. None of the mentioned options

C. T is a strict binary tree

D. T is a complete binary tree



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[Note: || Logical OR - The logical OR operator (||) returns the boolean value TRUE(or 1) if either or both operands is TRUE and returns FALSE(or 0) otherwise]

Ques 11:

A. 5
B. 6
C. 7
D. 8

Q. What will be the output of the following pseudocode?

12.

1. Integer x
2. Set x = 15
3. While(x EQUALS 15)

09 : 15 min sec

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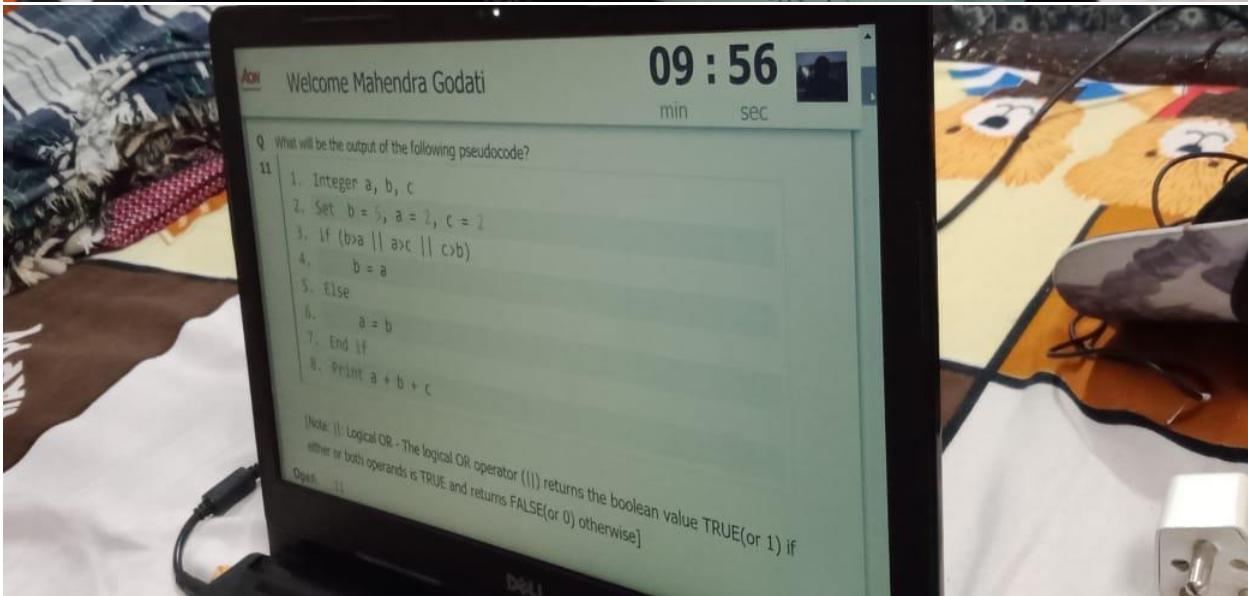
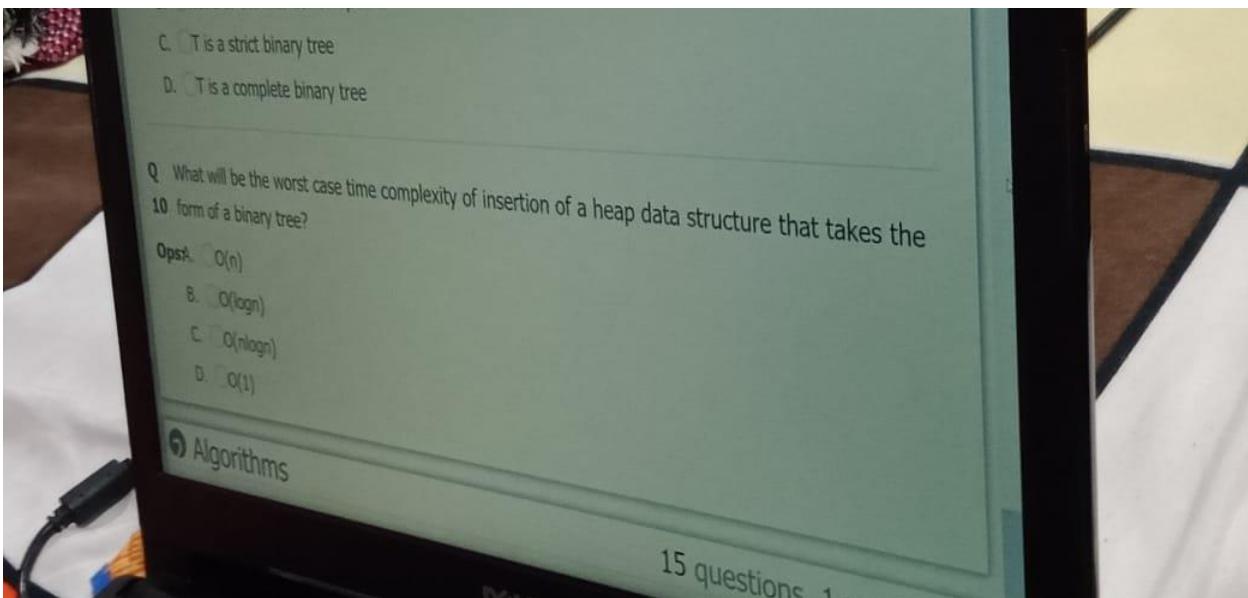
Q. Select the appropriate option for the given pseudocode.

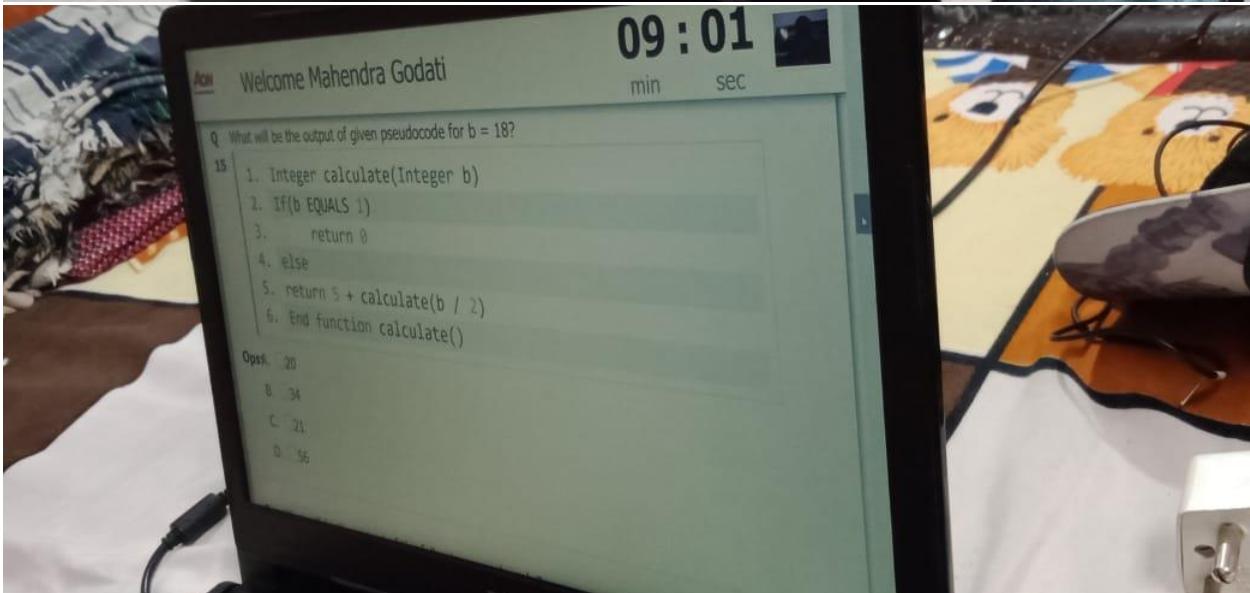
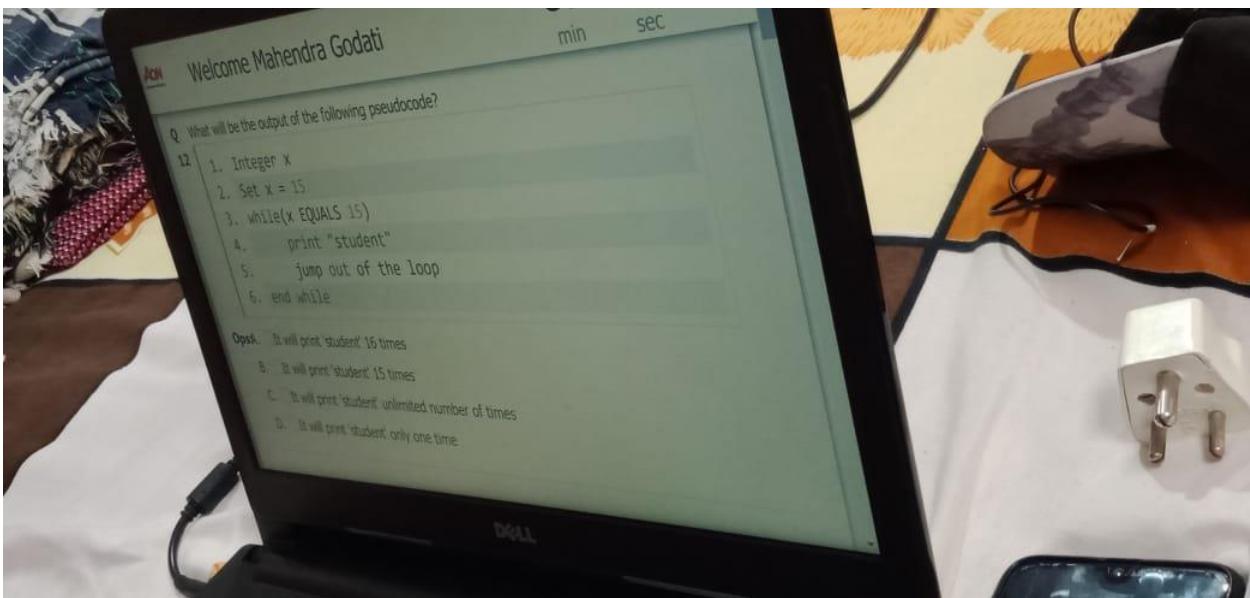
14.

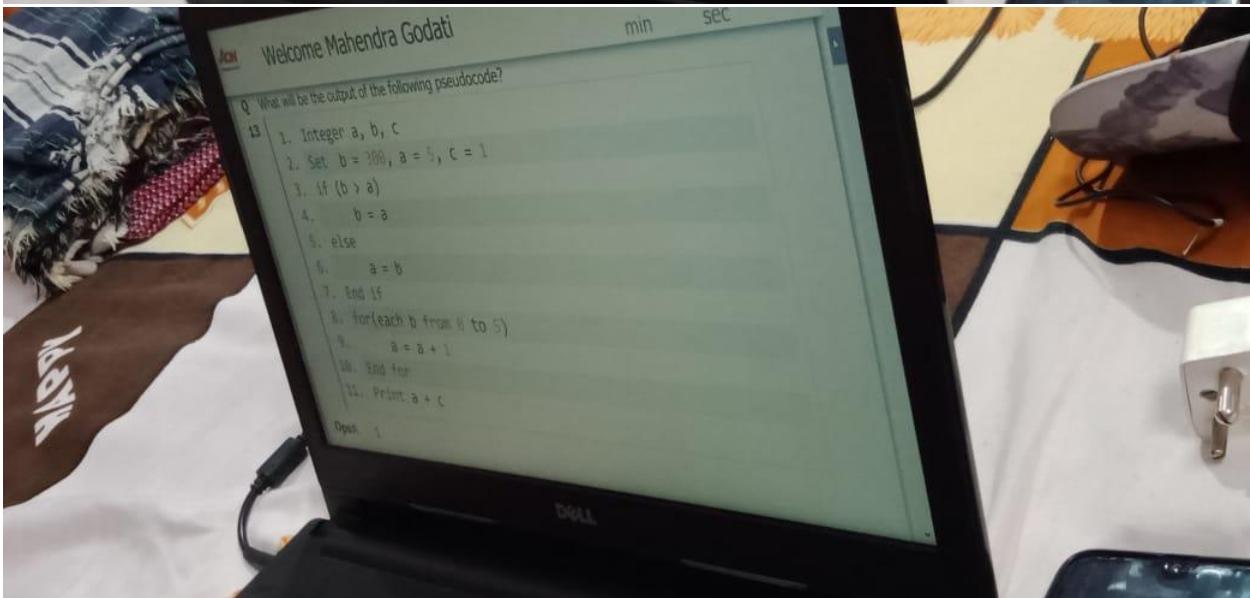
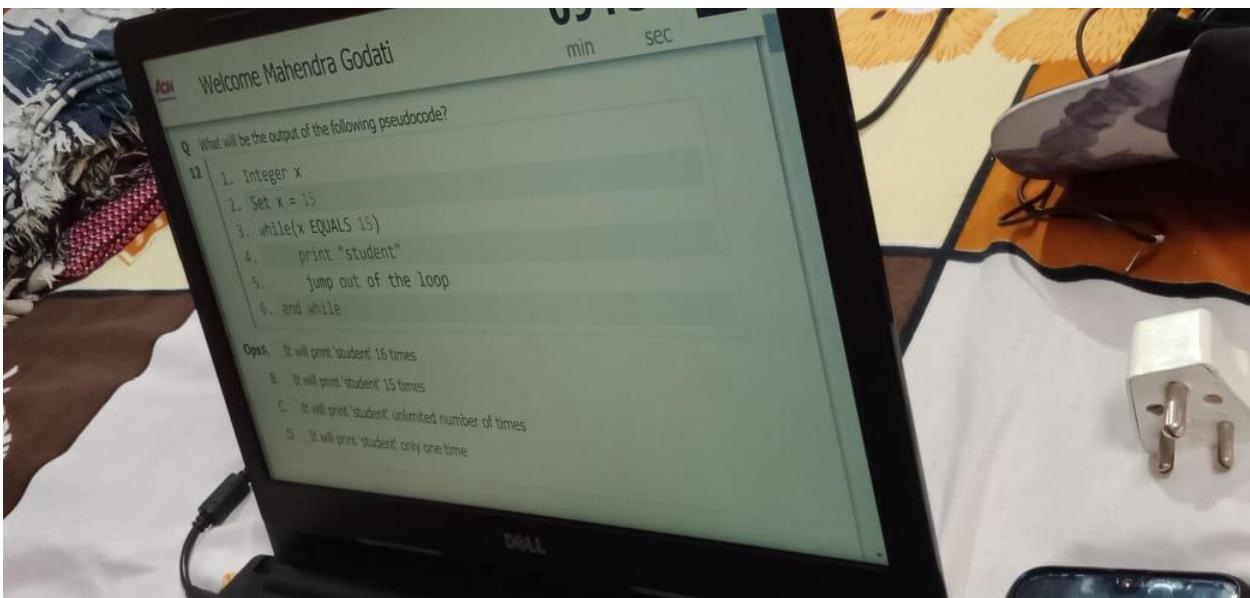
1. Integer a[3][3], k, j, sum
2. Set sum = 0
3. Set a[3][3] = { {1, 2, 3}, {4, 5, 6}, {7, 8, 9} }
4. for(each k from 0 to 2)
5. for(each j from 0 to 2)
6. sum = sum + a[k][j]
7. end for
8. jump out of the loop
9. end for
10. print sum

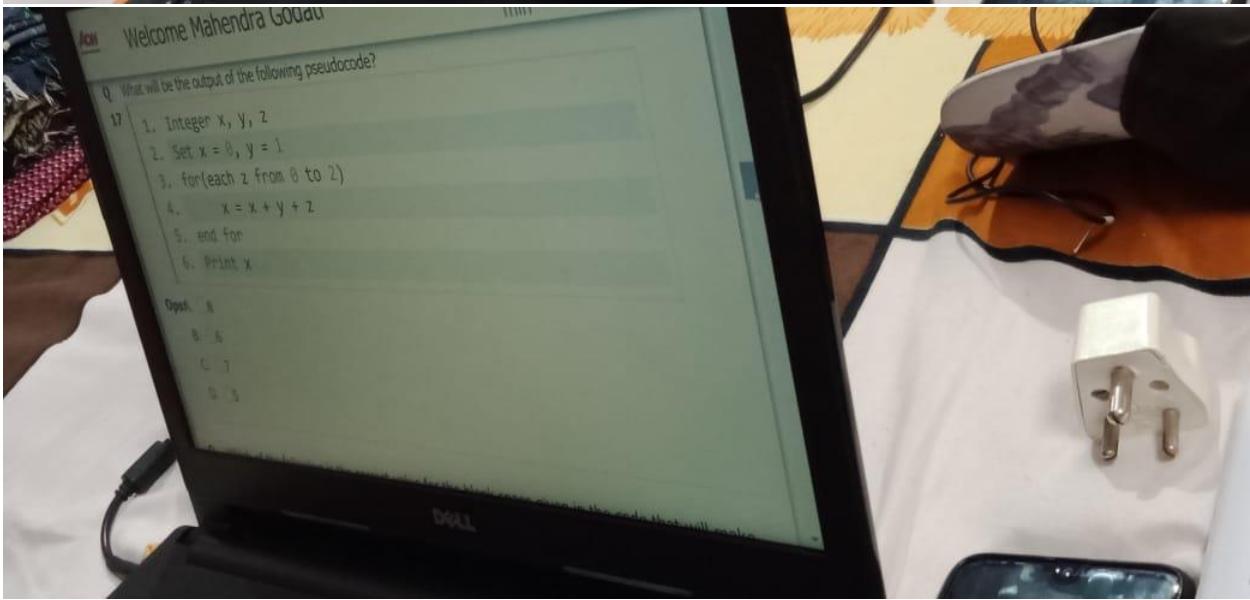
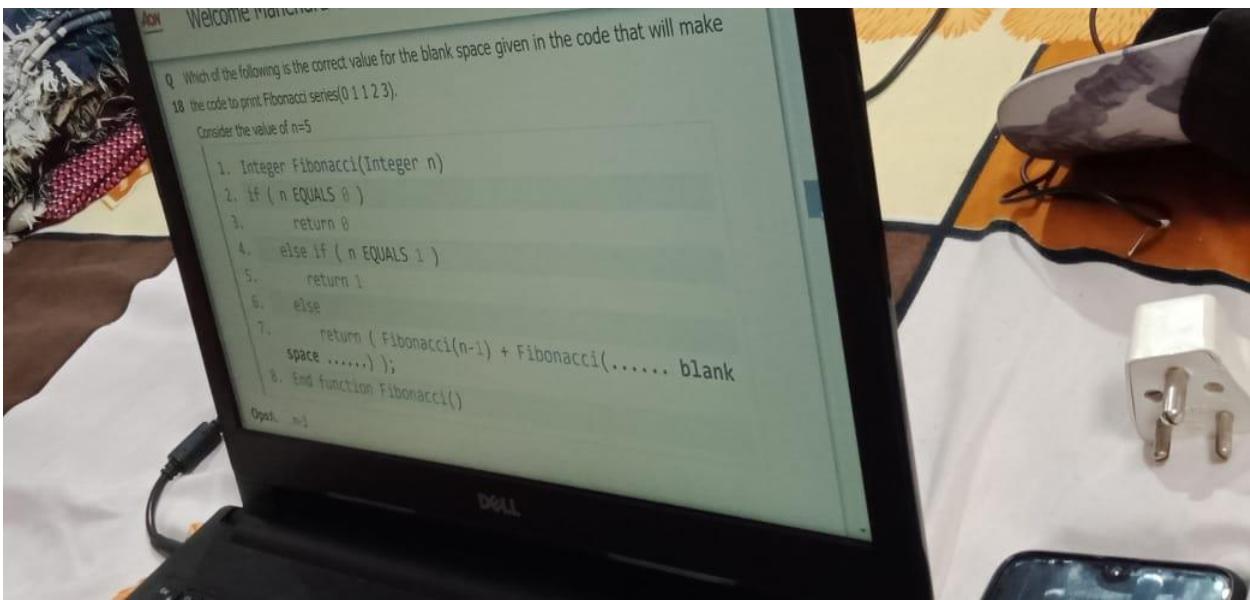
Ques. It will print the sum of the elements of the second column of given 2-D array

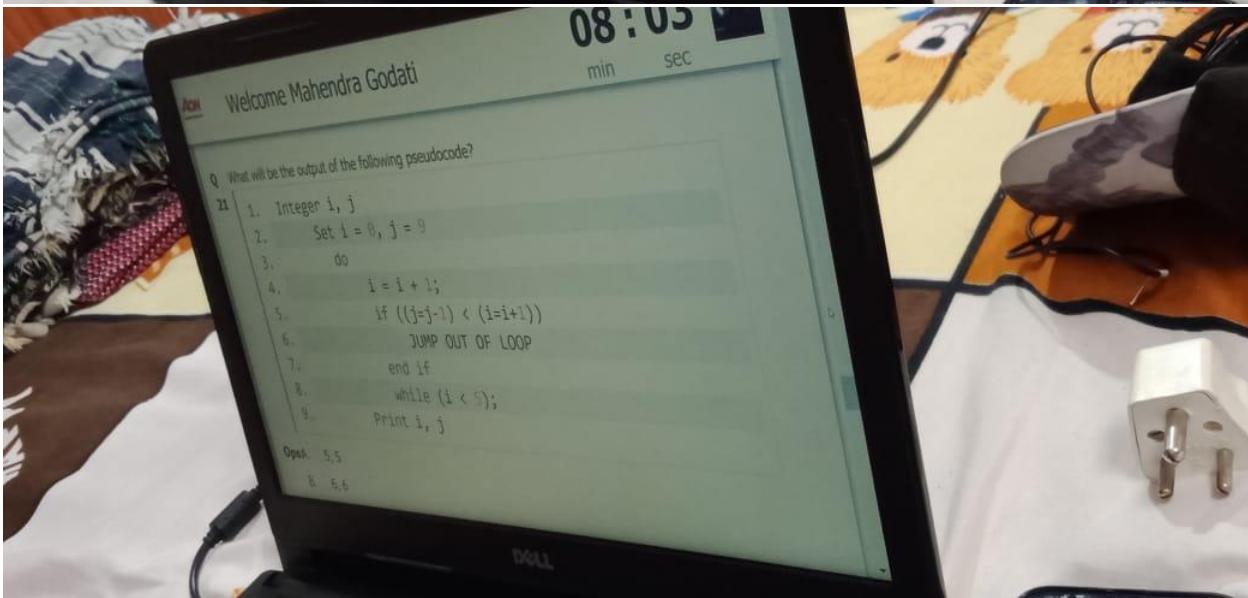
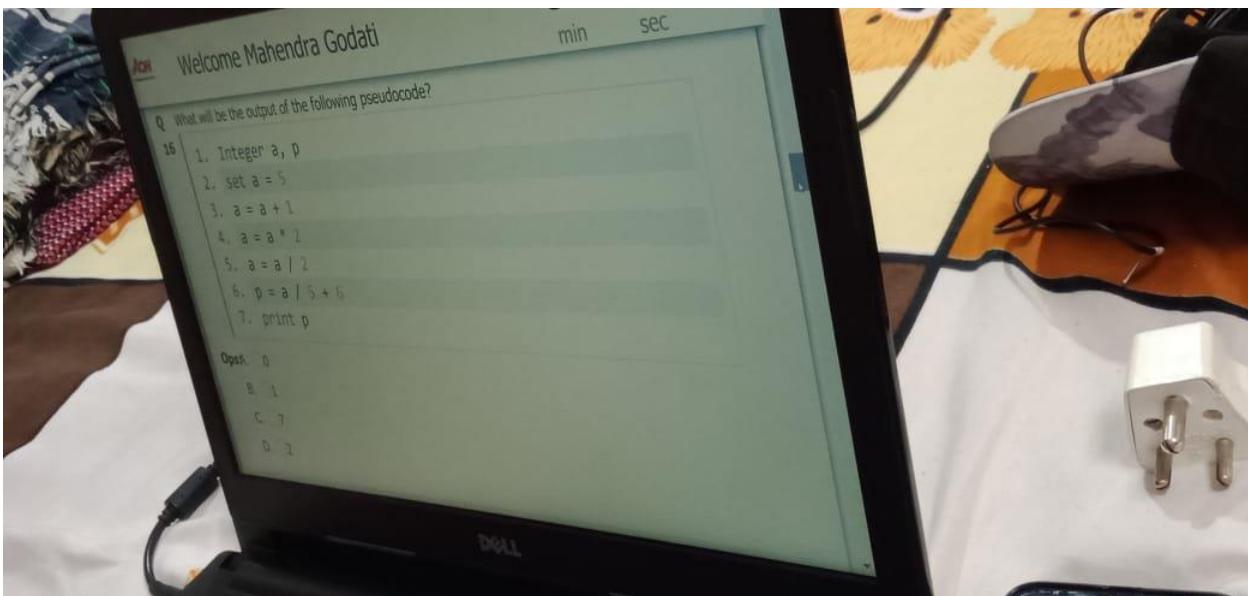
B. It will print the sum of the elements of the second row of given 2-D array

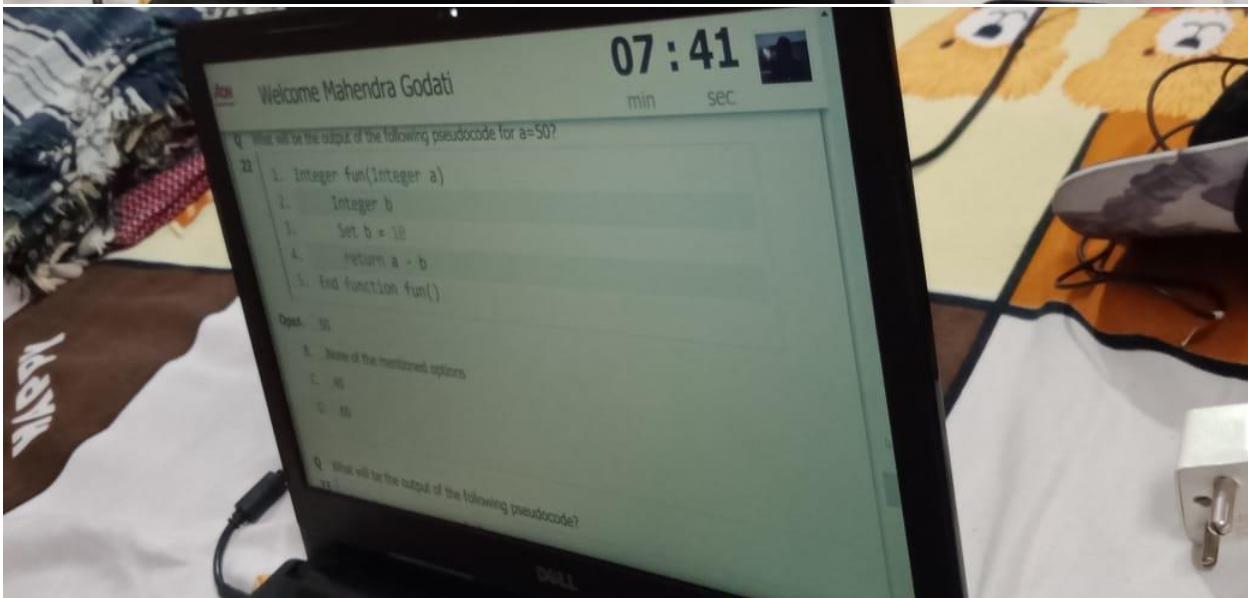
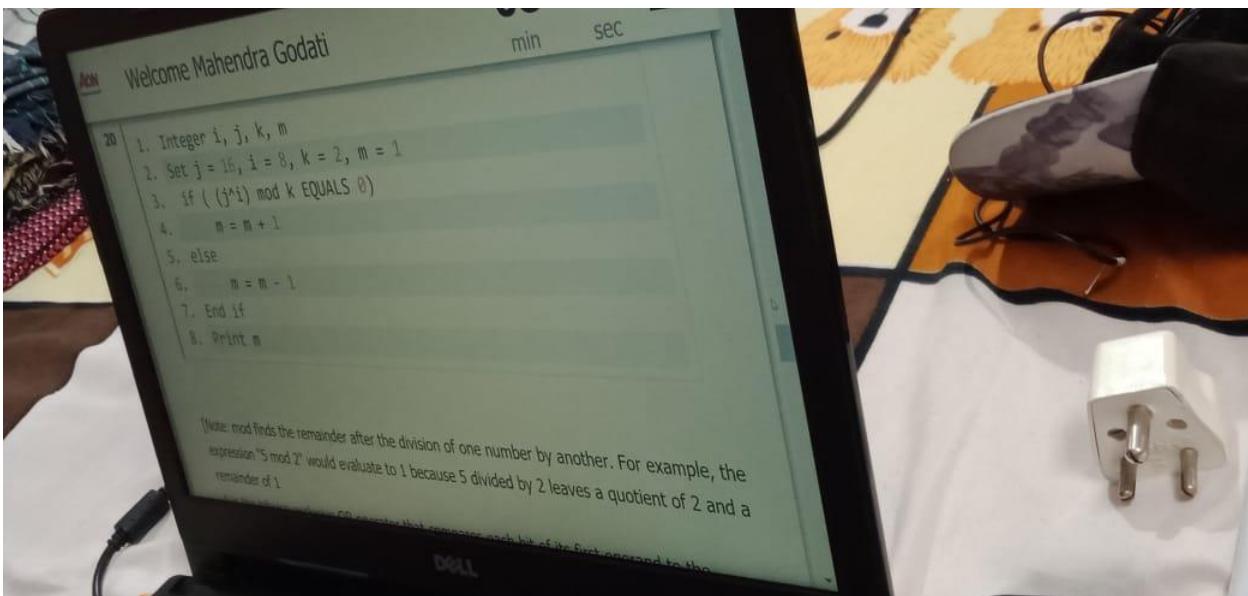


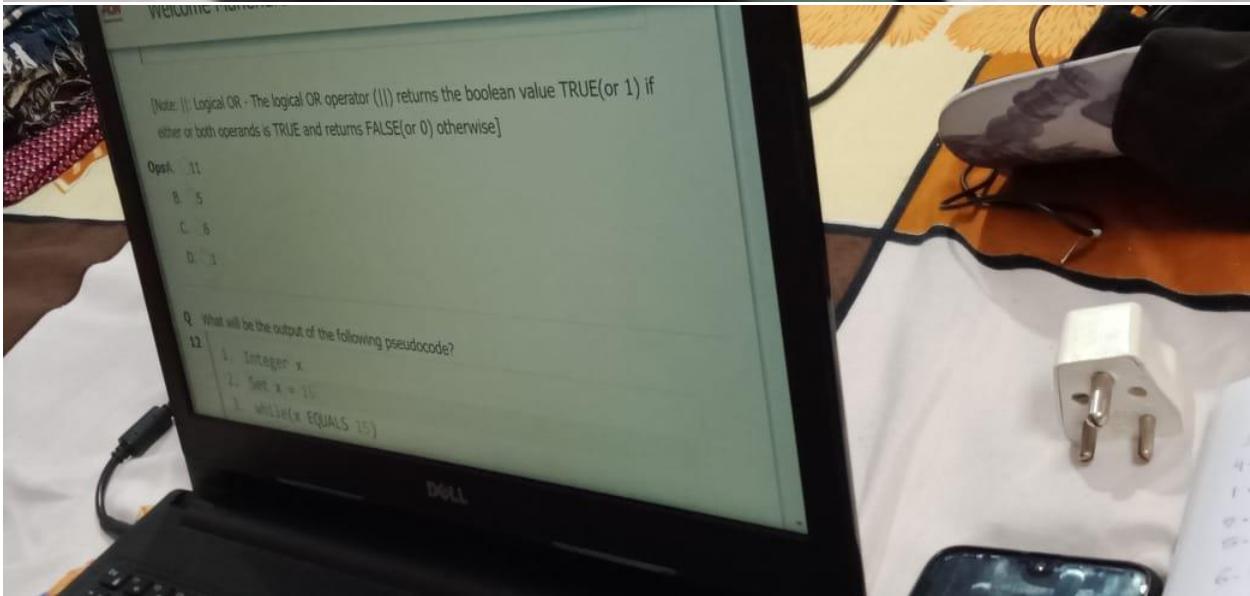
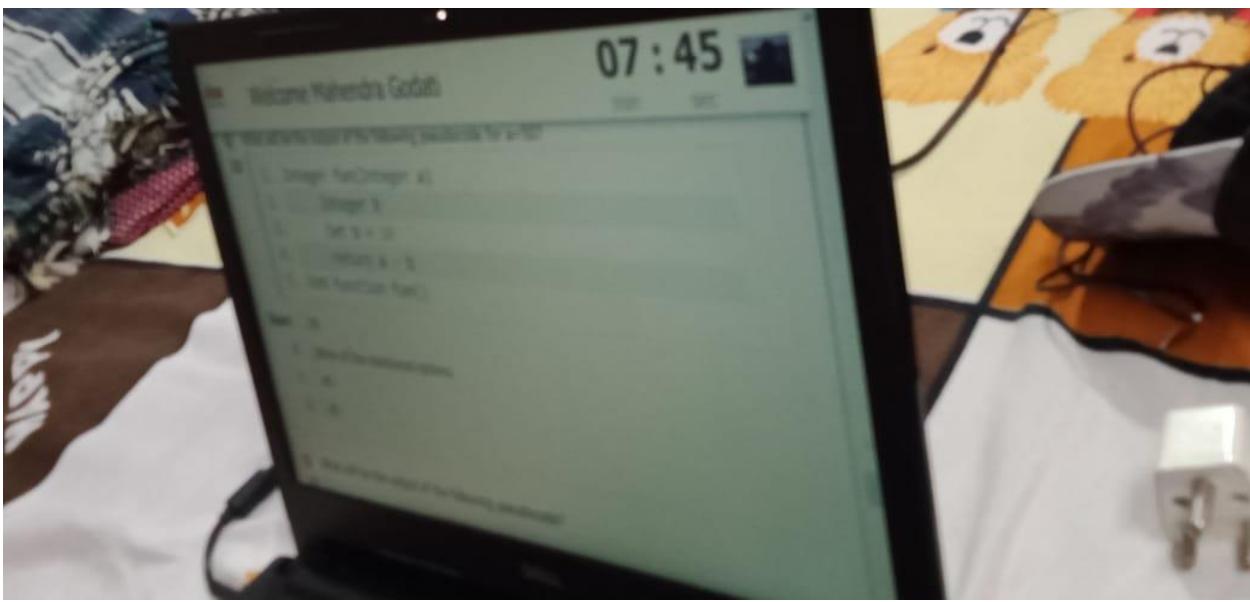












Q 9 Match the following for a B-tree of order m.



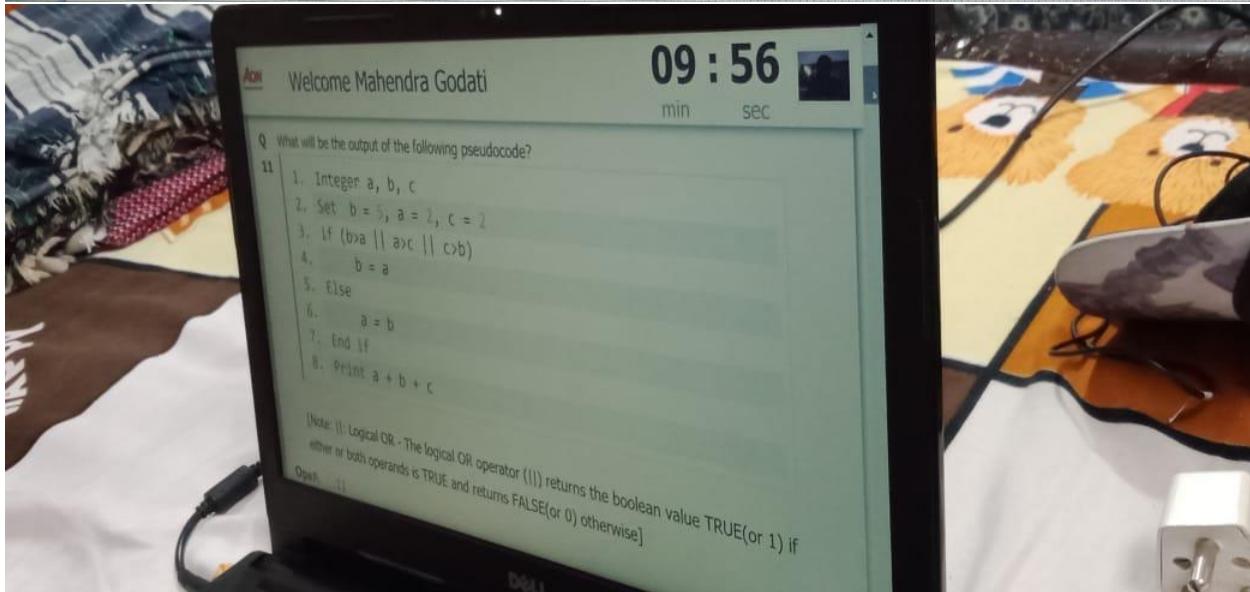
- A. Maximum number of non-empty children for each non-leaf node
- B. Minimum number of non-empty children for each non-root
- C. Maximum number of keys in each non-root

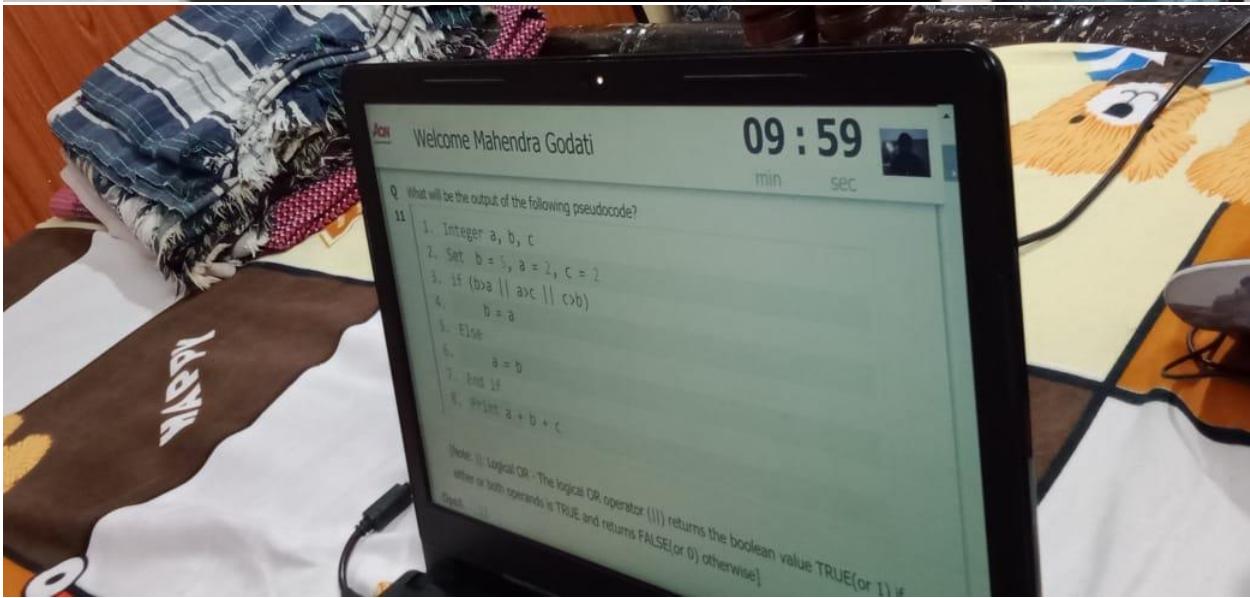
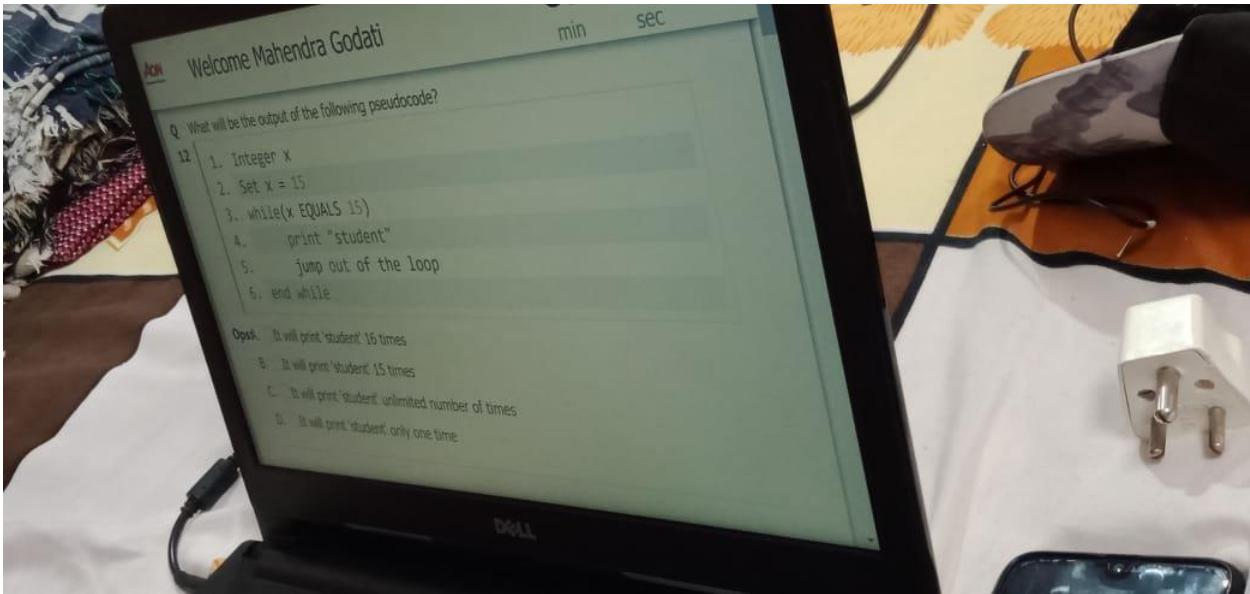
1. m

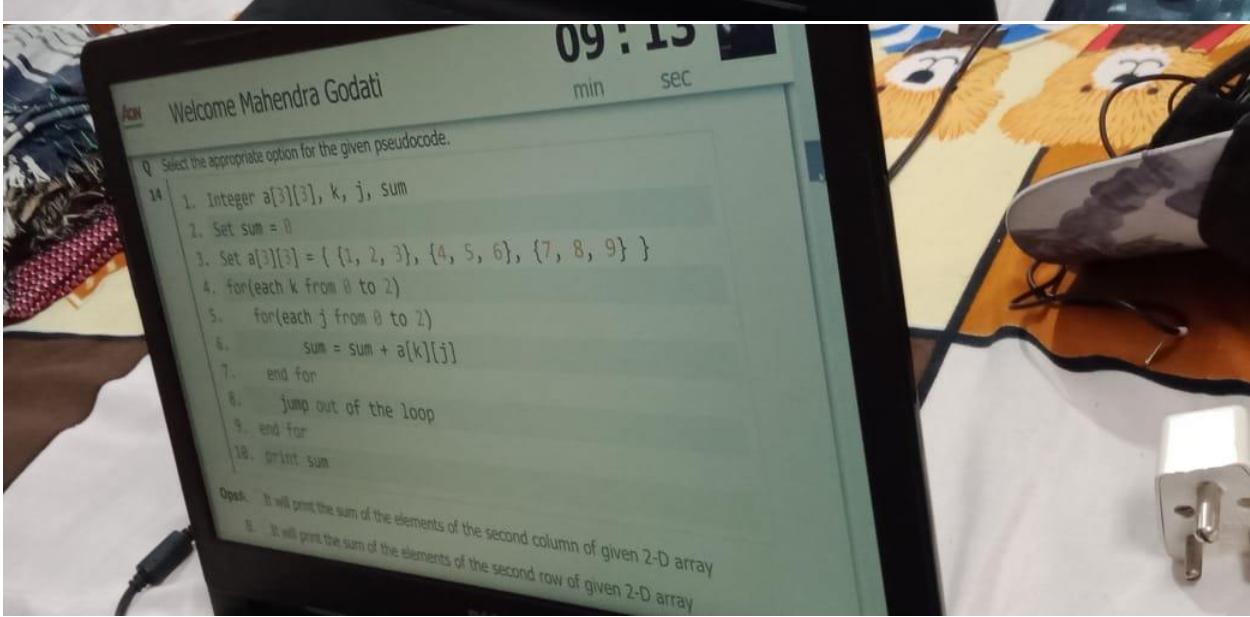
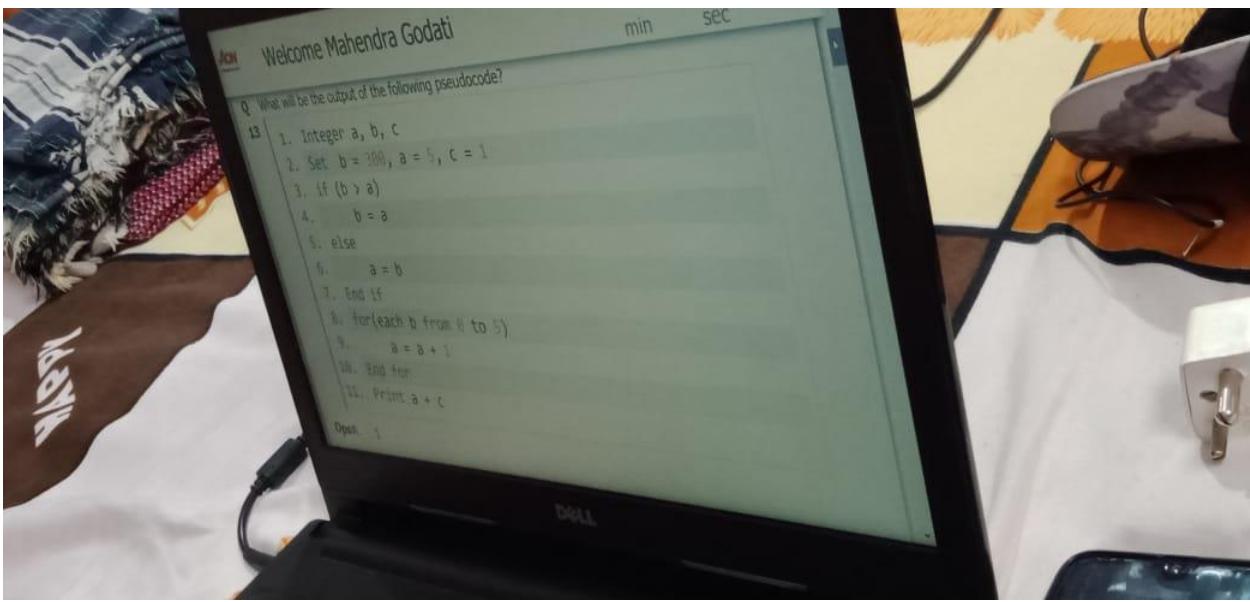
2. $m/2$

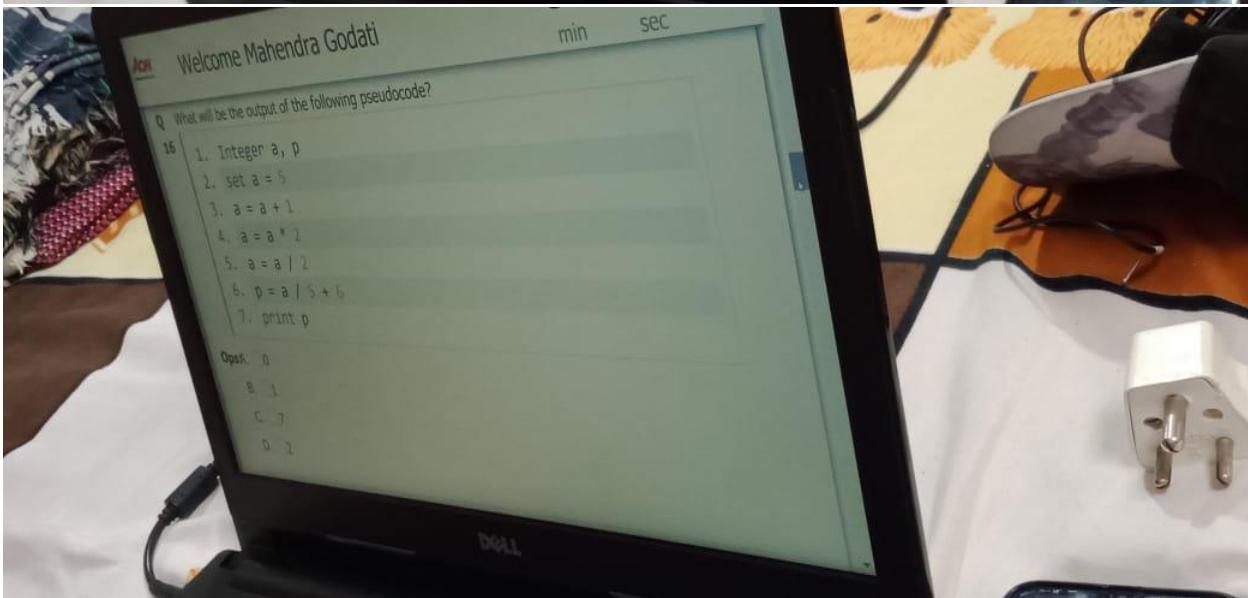
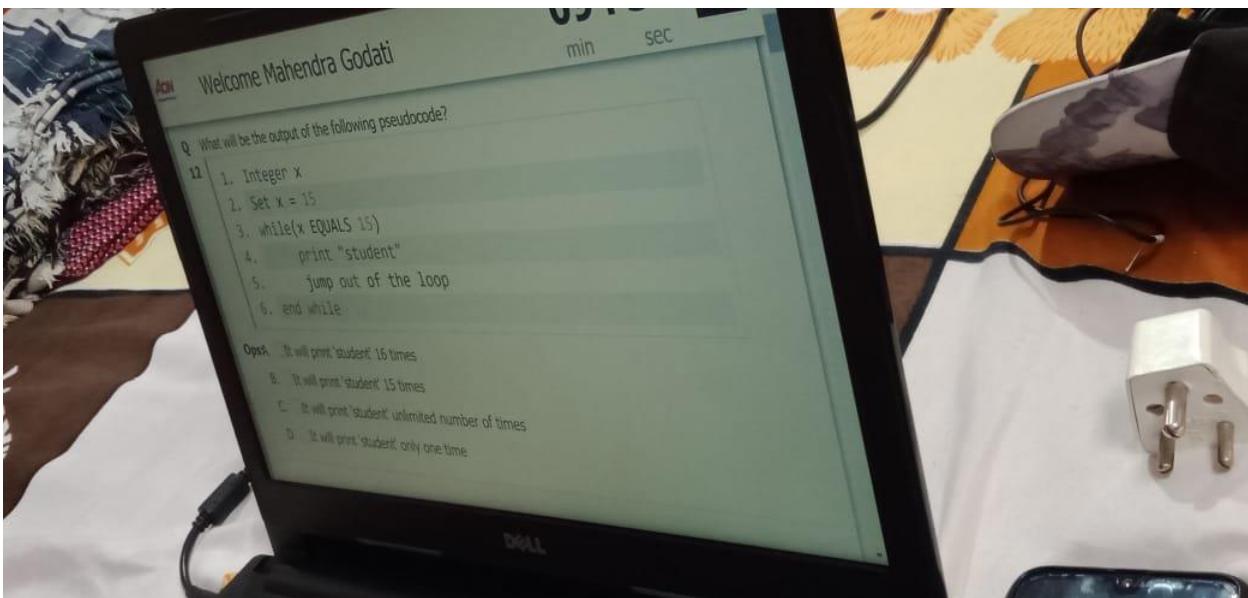
3. $m-1$

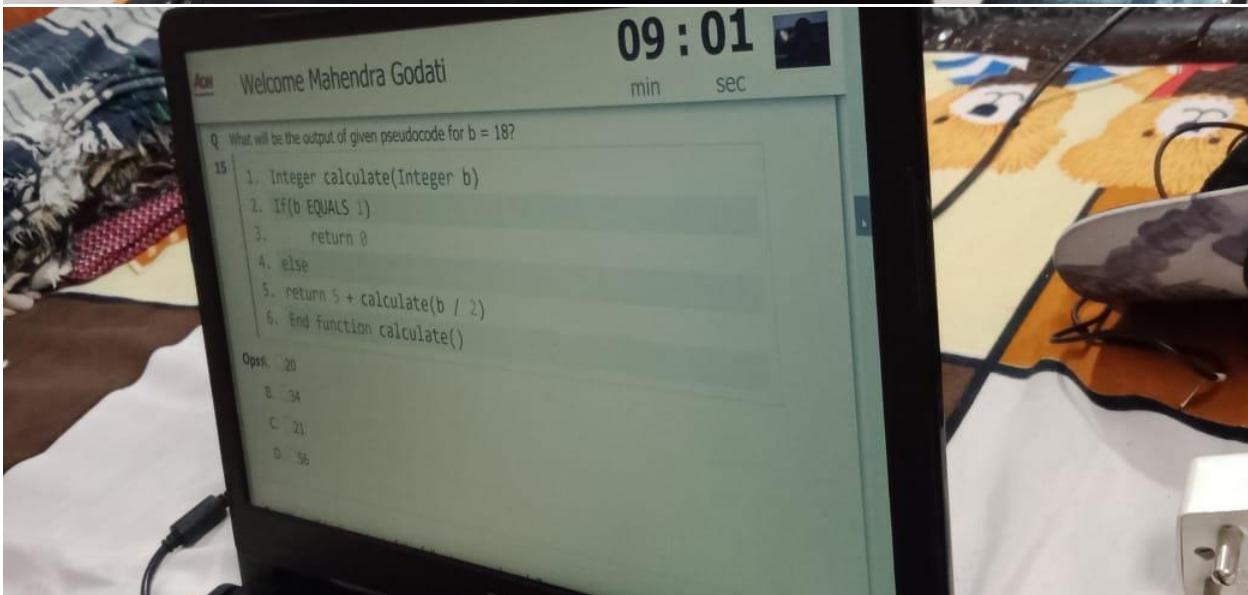
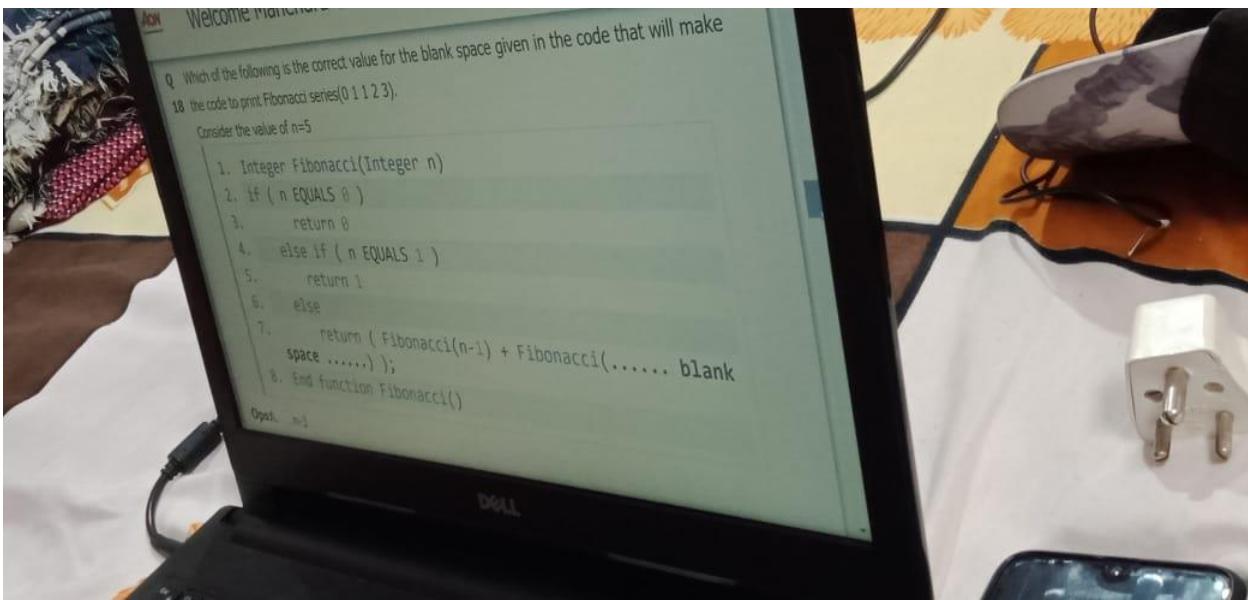
- Ops:**
- A. A-3, B-2, C-1
 - B. A-1, B-2, C-3
 - C. A-2, B-1, C-3
 - D. A-2, B-3, C-1

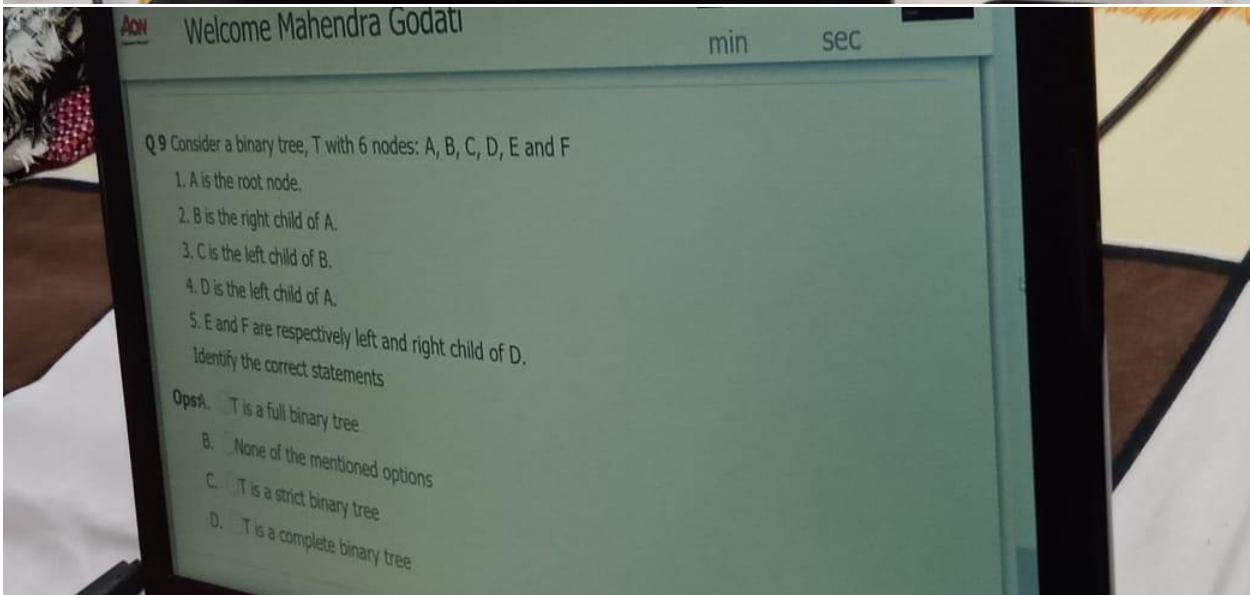
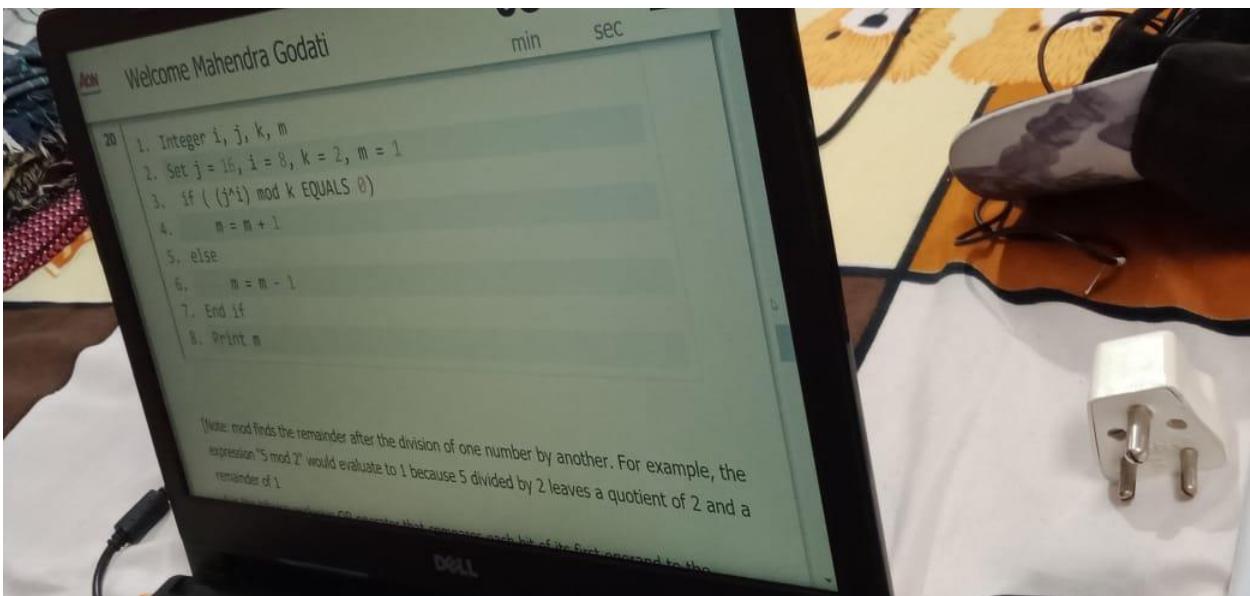












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07 : 41 min sec

Q. What will be the output of the following pseudocode for a=50?

22. 1. Integer fun(Integer a)
2. Integer b
3. Set b = 10
4. return a - b
5. End function fun()

Ops: 50
A. None of the mentioned options
B. 40
C. 50
D. 60

Q. What will be the output of the following pseudocode?

C. T is a strict binary tree
D. T is a complete binary tree

Q. What will be the worst case time complexity of insertion of a heap data structure that takes the form of a binary tree?
10. Ops: A. O(n)
B. O(logn)
C. O(nlogn)
D. O(1)

Algorithms

15 questions 1

C. 25168

D. None of the mentioned options

Q 8 Calculate the number of labelled binary trees possible when the number of nodes is 4.

OpsA. 336

B. 14

C. None of the mentioned options

D. 48

Q 9 Consider a binary tree, T with 6 nodes: A, B, C, D, E and F

1. A is the root node.
2. B is the right child of A.
3. C is the left child of B.

Q What will be the output of the following pseudocode?

```
21 1. Integer i, j  
2.     Set i = 0, j = 9  
3.     do  
4.         i = i + 1;  
5.         if ((j=j-1) < (i=i+1))  
6.             JUMP OUT OF LOOP  
7.         end if  
8.         while (i < 5);  
9.         Print i, j
```

OpsA. 5,5

B. 5,5

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min sec

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D. None of the mentioned options

Q.7 Consider an array A with 5 elements:

A= { 2, 8, 5, 6, 1 }

Person X wants to sort the array in ascending order, for which he is using bubble sort.
How will the array look like after three passes?

OpsA. 21568

B. 12568

C. 25168

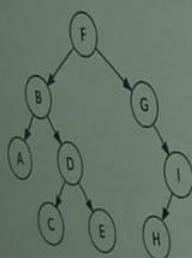
D. None of the mentioned options

Q.8 Calculate the number of labelled binary trees possible when the number of nodes is 4

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min sec

Q.5 What is the height of the given binary tree?



OpsA. 1

B. 3

C. 4

D. 2

Q.9 Consider a binary tree, T with 6 nodes: A, B, C, D, E and F

1. A is the root node.
2. B is the right child of A.
3. C is the left child of B.
4. D is the left child of A.
5. E and F are respectively left and right child of D.

Identify the correct statements

- OpsA. T is a full binary tree
B. None of the mentioned options
C. T is a strict binary tree
D. T is a complete binary tree

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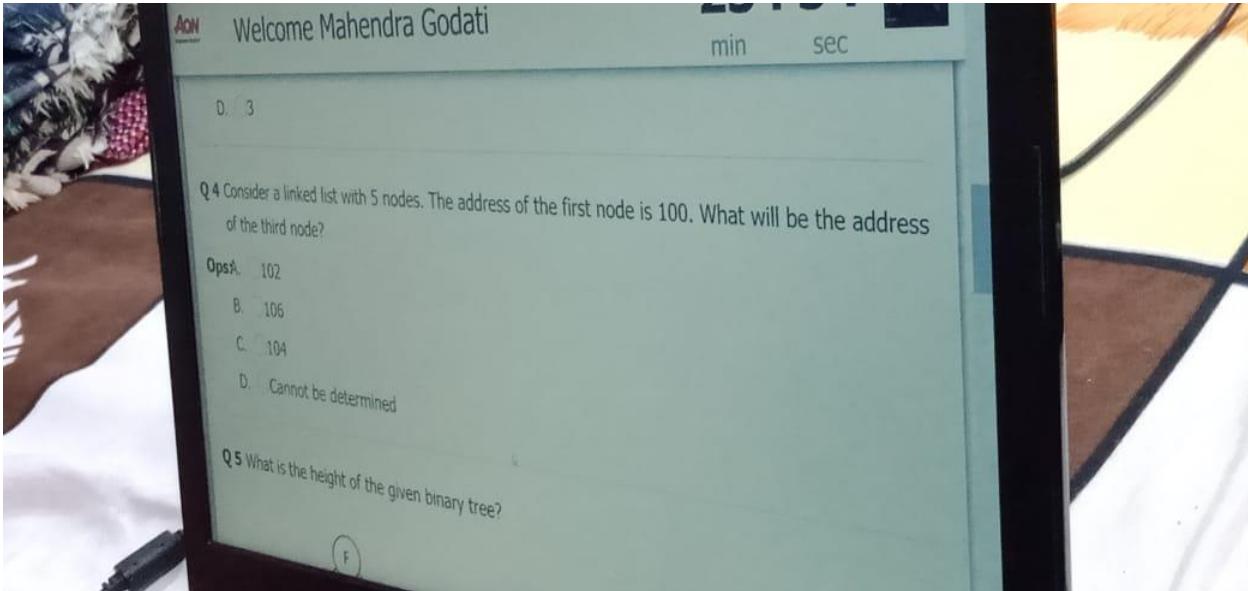
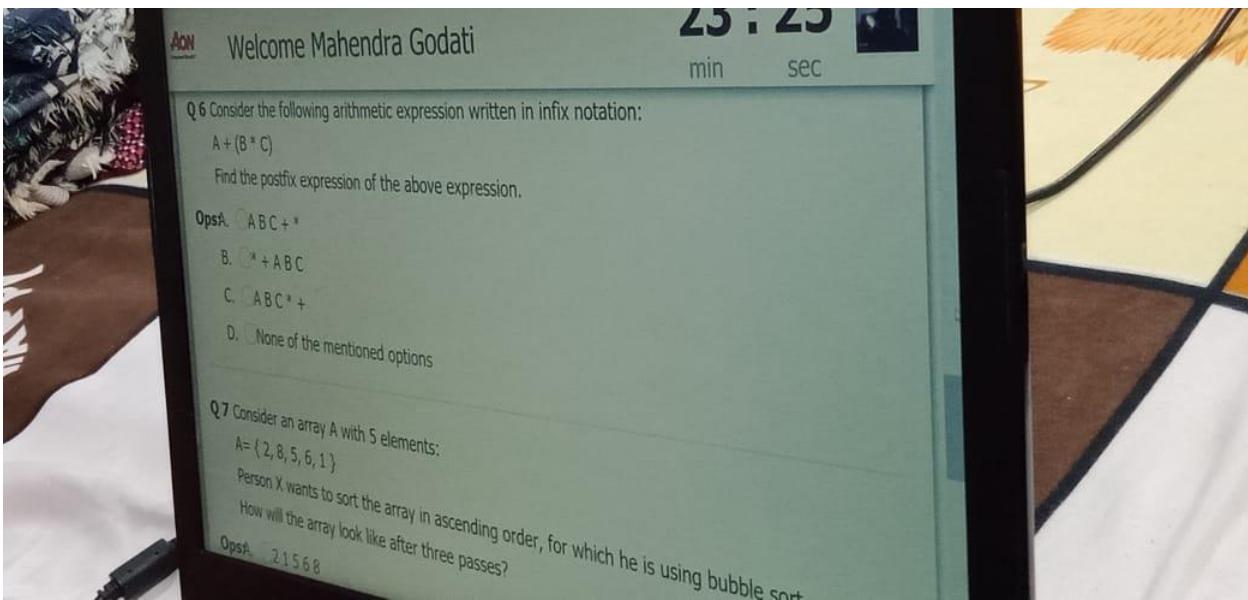
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- C. header list
D. Array

Q.3 Consider an array A={1,2,3} and an array B={-1,-2,-3}. An array C has been made by taking the sum of corresponding elements of A and B. (C also has three elements). Calculate the sum of the first and third element present in array C.

- OpsA. 0
B. -6
C. 6
D. 3

Q.4 Consider a linked list with 5 nodes. The address of the first node is 1000. What is the address of the third node?



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Q 5 What is the height of the given binary tree?

```
graph TD; F((F)) --> B((B)); F --> G((G)); B --> A((A)); B --> D((D)); D --> C((C)); D --> E((E)); G --> I((I)); G --> H((H))
```

OpsA. 1
B. 3
C. 4
D. 2

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20 . 54 min sec

Q 4 Consider a linked list with 5 nodes. The address of the first node is 100. What will be the address of the third node?

OpsA. 102
B. 106
C. 104
D. Cannot be determined

Q 5 What is the height of the given binary tree?

```
graph TD; F((F)) --> B((B)); F --> G((G)); B --> A((A)); B --> D((D)); D --> C((C)); D --> E((E)); G --> I((I)); G --> H((H))
```

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24 : 12 min sec

Q 2 George is writing a program in which he wants to use the features of two way list and circular header list. Which of the following data structure would you recommend him?

OpsA. One way list
B. Two way circular list
C. Header list
D. Array

Q 3 Consider an array A={1,2,3} and an array B={-1,-2,-3}. An array C has been made by taking the sum of corresponding elements of A and B. (C also has three elements). Calculate the sum of the first and third element present in array C.

OpsA. 0

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24 . 29 min sec

1. Bubble sort
2. Insertion sort
3. Merge sort
4. Quick sort
5. Selection sort

Identify, which of the above sorting techniques are based on divide and conquer approach?

OpsA. Only 2, 3, 4 and 5
B. Only 1, 2 and 5
C. Only 3 and 4
D. Only 1, 3 and 4

