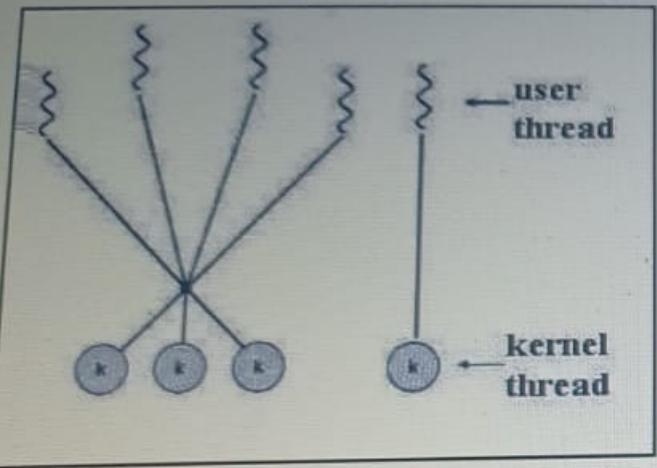


COMPUTER PROGRAMMING

LTIMindtree

PASSAGE



Choose the correct option.

The relationship between a user thread and a kernel thread can be presented as a thread model. Identify the shown model.

OPTIONS

Many-to-many model

Many-to-one model

One-to-one model

Two-level model

SUBMIT ANSWER

Choose the correct option.

Each process in a system is holding a resource and is waiting to acquire another resource that is held by some other process. All the processes are blocked because of the non-availability of the required resources. What is this condition known as?

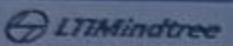
Options

Starvation

Busy waiting

Deadlock

Indefinite blocking



Choose the correct option.

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

Options

Bubble sort and Selection sort

Heap sort and Merge sort

Quick sort and Radix sort

Tree sort and Median-of-3 Quick sort

PASSAGE

Group A	Group B
A. First-Come, First-Serve Replacement Algorithm	1. Coalescing
B. Least Recently Used Replacement Algorithm	2. Stack Algorithm
C. Paging	3. Belady's Anomaly
D. Buddy System	4. Thrashing

Choose the correct option.

Refer to the given table. Match the memory management terms associated with them in Group B.

OPTIONS

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

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

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

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

Choose the correct option.

which normal form is a table "customer" in, if it has the following characteristics?

1. It has transitive dependencies.
2. There are no partial dependencies in it.
3. There is no column with redundancy in it.

Options

1NF

2NF

3NF

BCNF

Choose the correct option.

Which construct **CANNOT** be used for process synchronization?

Options

Semaphores

Monitors

Mutex locks

None of the above

Choose the correct option.

A computer's memory consists of 4K words of 16 bits each, and one byte equals 8 bits.
How many bytes does this memory contain?

Options

2K

4K

8K

16K

Choose the correct option.

Which command in SQL is used to delete a table's entire data and structure?

Options

Drop

Destroy

Delete

Truncate

Choose the correct option.

What does isolation in ACID rules for a transaction in a database mean?

Options

Either the effect of the entire transactions is reflected in the database or the transaction is rolled back to its original state.

No transaction can interfere in the end result of another transaction.

Effects of a successful transaction must persist in a database.

Every individual transaction must leave the database in a consistent state maintaining the integrity of the database.

Choose the correct option.

How can a call to an overloaded function be ambiguous?

Options

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 option.

Options

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 option.

Options

Which expression gives the maximum number of nodes at level i^{th} of a binary tree?

(Note: The root is at level 1.)

2^{i-1}

3^{i-1}

2^i

$2^i - 1$

Choose the correct option.

A language has 28 different letters in total. Each word in the language consists of a maximum of 7 letters. A programmer wants to create a data type to store a word of this language. She decides to store the word as an array of letters. How many bits should she assign to the data type to store all kinds of words of the language?

Options

7

14

21

28

35

28

196

Choose the correct option.

Code A contains a set of eight lines that occur ten times in different points of the program. This code is passed to a programmer who puts the set of eight lines in a function definition and calls them at the ten points in the program. Assume this new code to be Code B. Which code will run faster using an interpreter?

Options

Code A

Code B

Both the cod

None of the a

Choose the correct option:-

Recursion makes a significant characteristic of which of the given programming paradigms?

Options

Procedural Par

Functional Par

Object Oriente

Structural Par

Choose the correct option.

How can a call to an overloaded function be ambiguous?

Options

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

SUBMIT

Choose the correct option.

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

Beginning from a node, all the adjacent nodes are

Beginning from a node, each adjacent node is fully traversing the next adjacent node

Beginning from a node, the nodes are traversed in

None of the above

Choose the correct option.

Options

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*

Only 1

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 2

Only 3

Both 2 and 3

Choose the correct option.

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"
    }
}
```

Options

top=N-1

top<N

top>1

top>= 0

Choose the correct option.

Options

A data type is stored as a 6-bit signed integer. Which of the given options cannot be represented by this data type?

-72

0

32

18

Choose the correct option.

Options

What is the average time required to perform a successful sequential search for an element in an array A(1: n)?

(n+1)/2

$\log_2 n$



$n(n+1)/2$

n^2

Choose the correct option.

Options

Identify the lowest level format to which the computer converts a program in a higher language before execution.

English code

Machine cod

Assembly lan

System langu

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

```
function modify(b,a)
{
    return a - b
}

function calculate()
{
    integer a = 5, b = 12, c
    c = modify(a, b);
    print c
}
```

Options

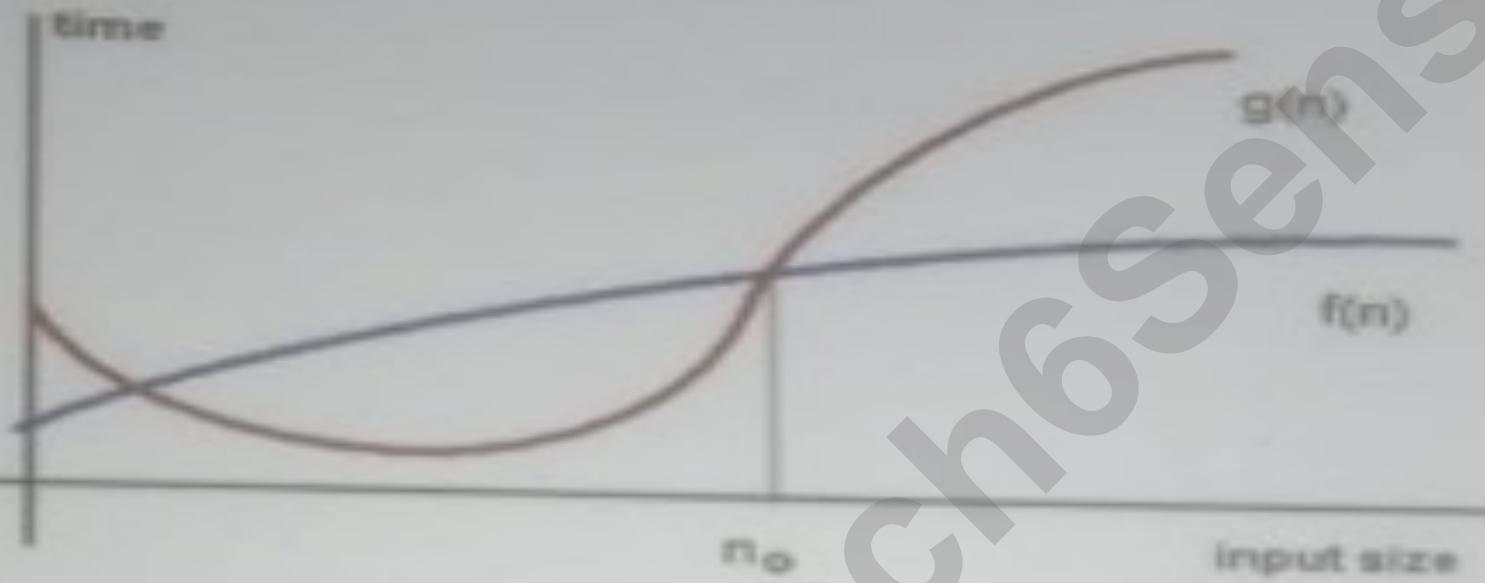
A

B

C

Error

ASSAGE



What can you say about figure?

OPTIONS

$f(n)=\Theta(g(n))$

$f(n)=o(g(n))$

$f(n)=O(g(n))$

Choose the correct option.

Options

What is the maximum number of edges in an undirected graph with "n" vertices?

$n^2(n-1)/2$

$n^2(n+1)/2$

$n^k n$

2^n

Choose the correct option.

What does the following function do?

```
function operation (int a, int b)
{
    if (a < b)
        { return operation(b, a) }
    else
        { return a }
}
```

Returns the max of (a,b)

Returns the min of (a,b)

Loops forever

Always returns the second parameter

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 option.

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

Bubble

Insert

Select

Heap

Tech6Sense

Options

Choose the correct option.

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. What 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.

Compile the

Use an inter

Compile the

None of the

Choose the correct option.

Options

A programmer needs to solve a problem that takes a number "n" as the input. The problem can solve for "n" if the solution for " $n-1$ " is given. Which programming technique should be used in this scenario?

Iteration

Decision-making

Object-oriented

Recursion

Choose the correct option.

What is the default scope of fields in a class of a C++ program?

Options

Protected

Public

Private

None of the above

PASSAGE

```
function myfunc()
{
    constant integer i=5
    if( i > 3 )
        print "I am small"
    if( i > 5 )
        print "I am large"
    else print "I am different"
}
```

DE : ES

OPTIONS

I am small

I am small or

I am small and

This code will

Tech6Sense

Choose the correct option.

Options

A programmer writes an efficient program to add two upper triangular 10×10 matrices with the elements on the diagonals retained. How many total additions will the program make?

100

55

25

10

Choose the correct option.

Consider an array on which bubble sort is used. To which of the given elements will the bubble sort compare the element $A[x]$ with, in a single iteration?

Options

A[x+1]

A[x+2]

A[x+2x]

All of the above

Choose the correct option.

What is Belady's anomaly?

For some page replacement algorithms, page faults may increase as the number of allocated frames increases.

For some page replacement algorithms, page faults may decrease as the number of allocated frames increases.

For some page replacement algorithms, page faults may decrease as the number of allocated frames decreases.

For some page replacement algorithms, page faults do not depend on the number of frames.

Tech6Sense

Choose the correct option.

The head of a moving head disk with 100 tracks numbered from 0 to 99 is currently serving a request at track 50. The queue of requests kept in the "first-come, first-served" order is 10, 60, 70, 40, 80. What will be the total head movement for these requests?

Options

150

160

170

180

LTI Mindtree

24 : 47

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 option.

Refer to the given pseudocode. The code accessible member function and a data objectname.functionname and objectname should be deleted from the code to rectify.

OPTIONS

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



ETIMindtree

PASSAGE:

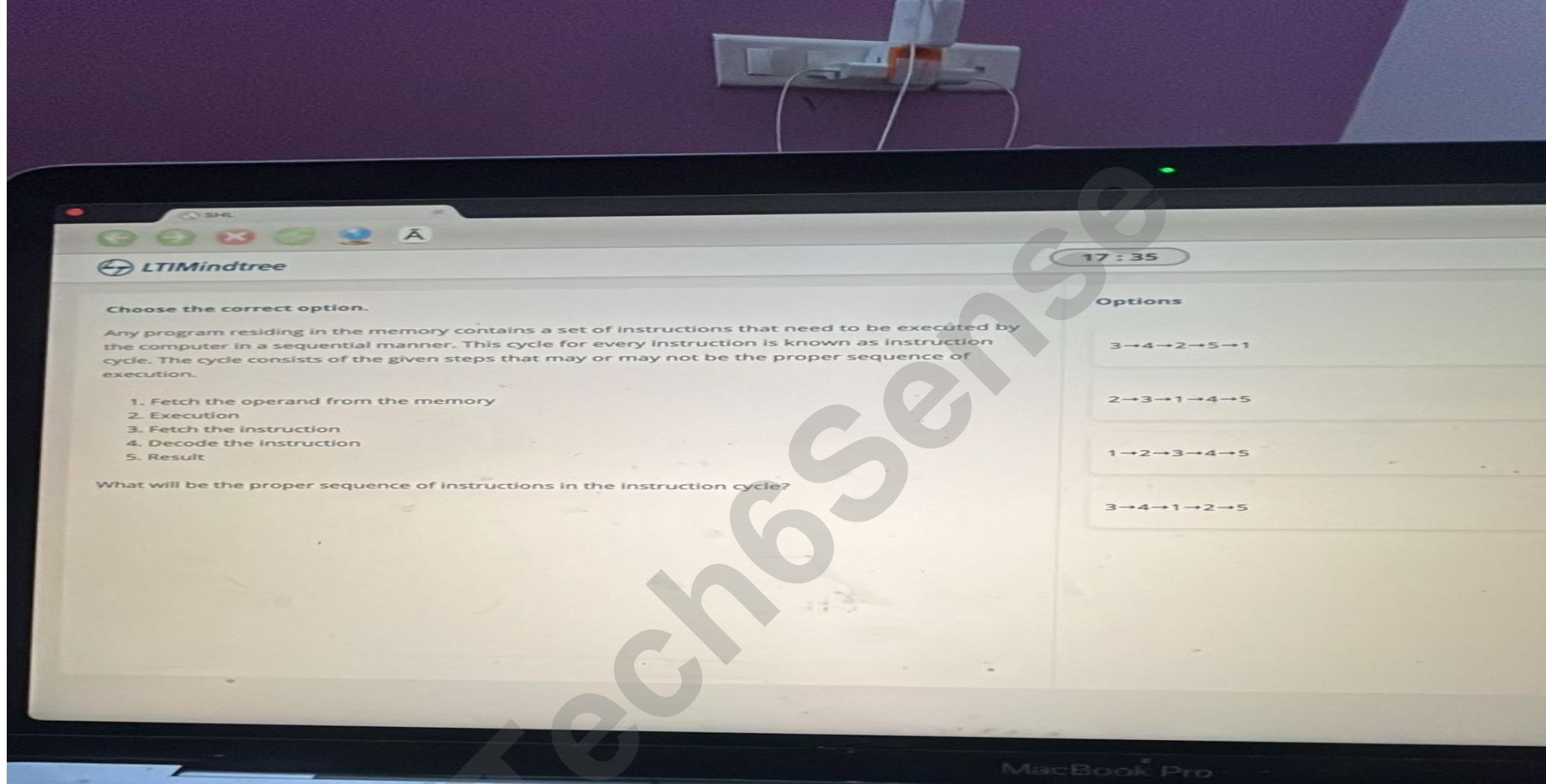
Process	Burst Time (in milliseconds)
P1	8
P2	4
P3	2

Choose the correct option:

The processes P1, P2 and P3 shown in the table arrive at the same time and are processed by the Shortest Job First (SJF) scheduling algorithm. Calculate the average wait-time in milliseconds.

OPTIONS:

- 3.6
- 5.6
- 6.3
- 7.3



SHL

LTI Mindtree

15 : 59

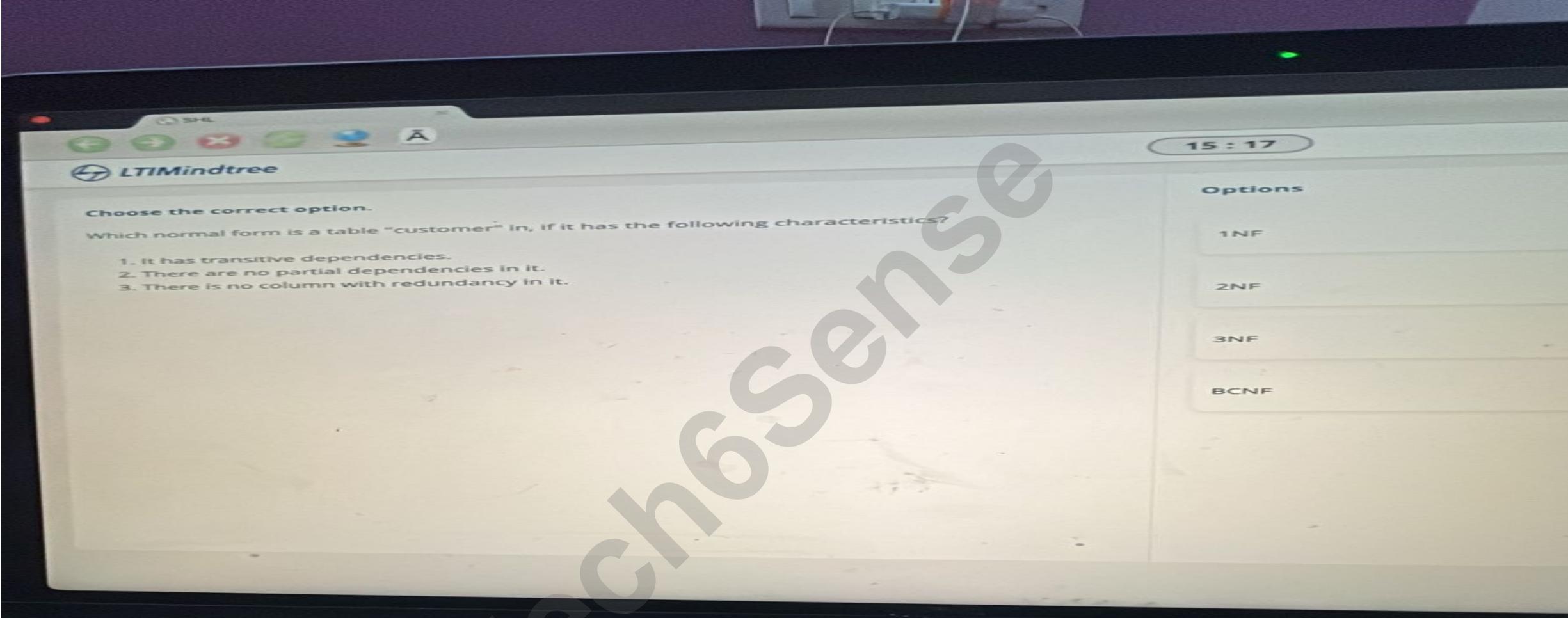
Choose the correct option.

Each process in a system is holding a resource and is waiting to acquire another resource that is held by some other process. All the processes are blocked because of the non-availability of the required resources. What is this condition known as?

Options

- Indefinite blocking
- Busy waiting
- Starvation
- Deadlock

The image shows a laptop screen with a question from an LTIMindtree test. The question asks about a specific condition in a system where processes are holding resources and waiting for others, resulting in all processes being blocked. It provides four options: Indefinite blocking, Busy waiting, Starvation, and Deadlock. The laptop is a MacBook Pro, and the keyboard is visible at the bottom.

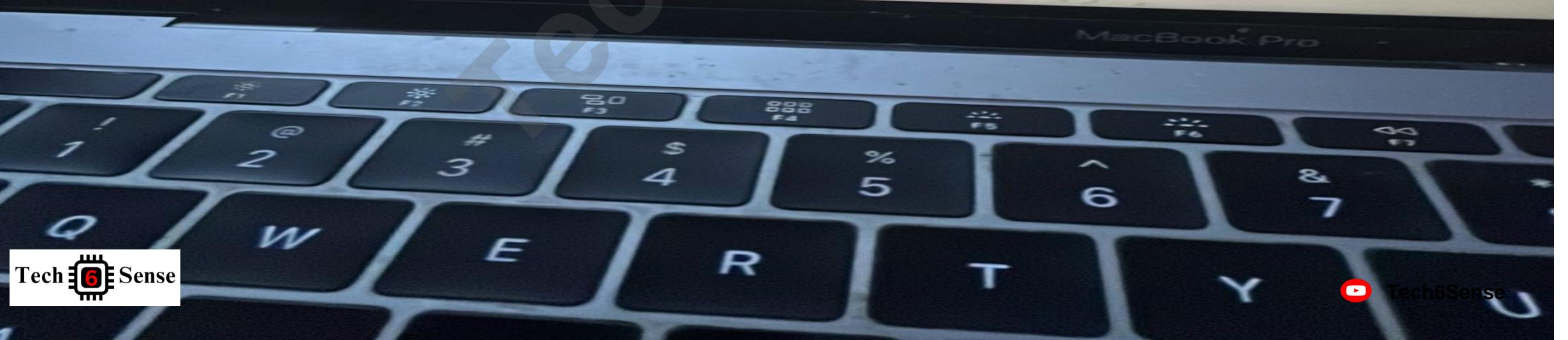
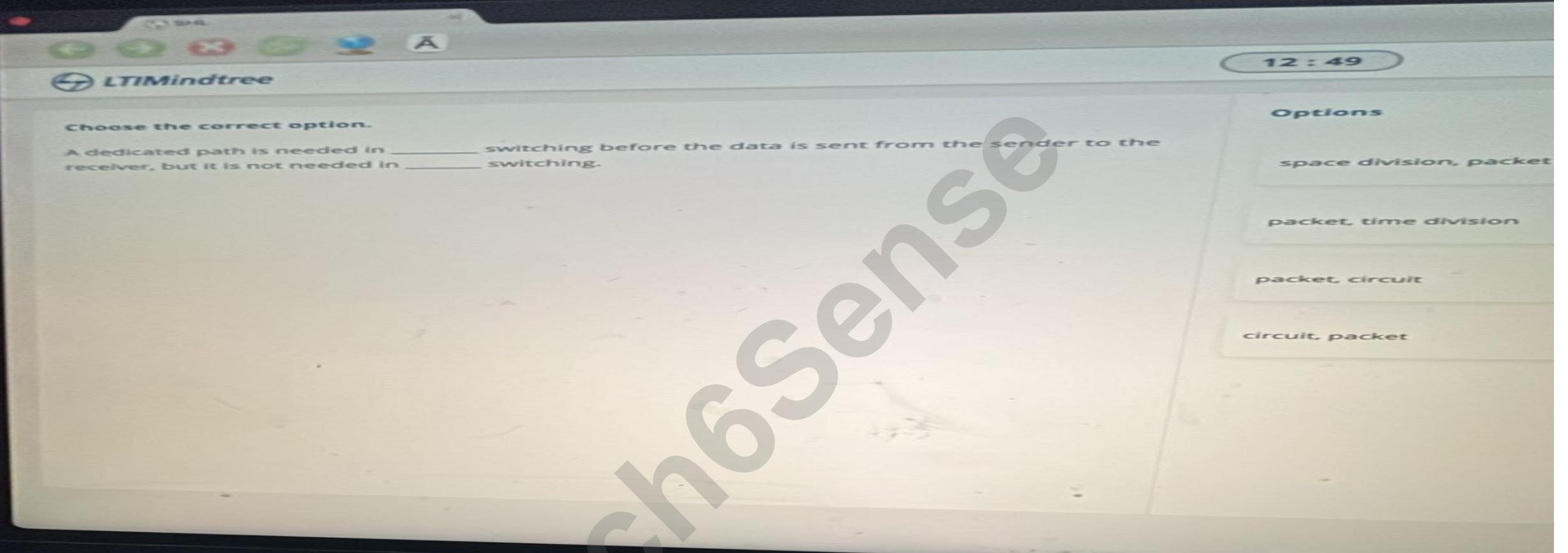


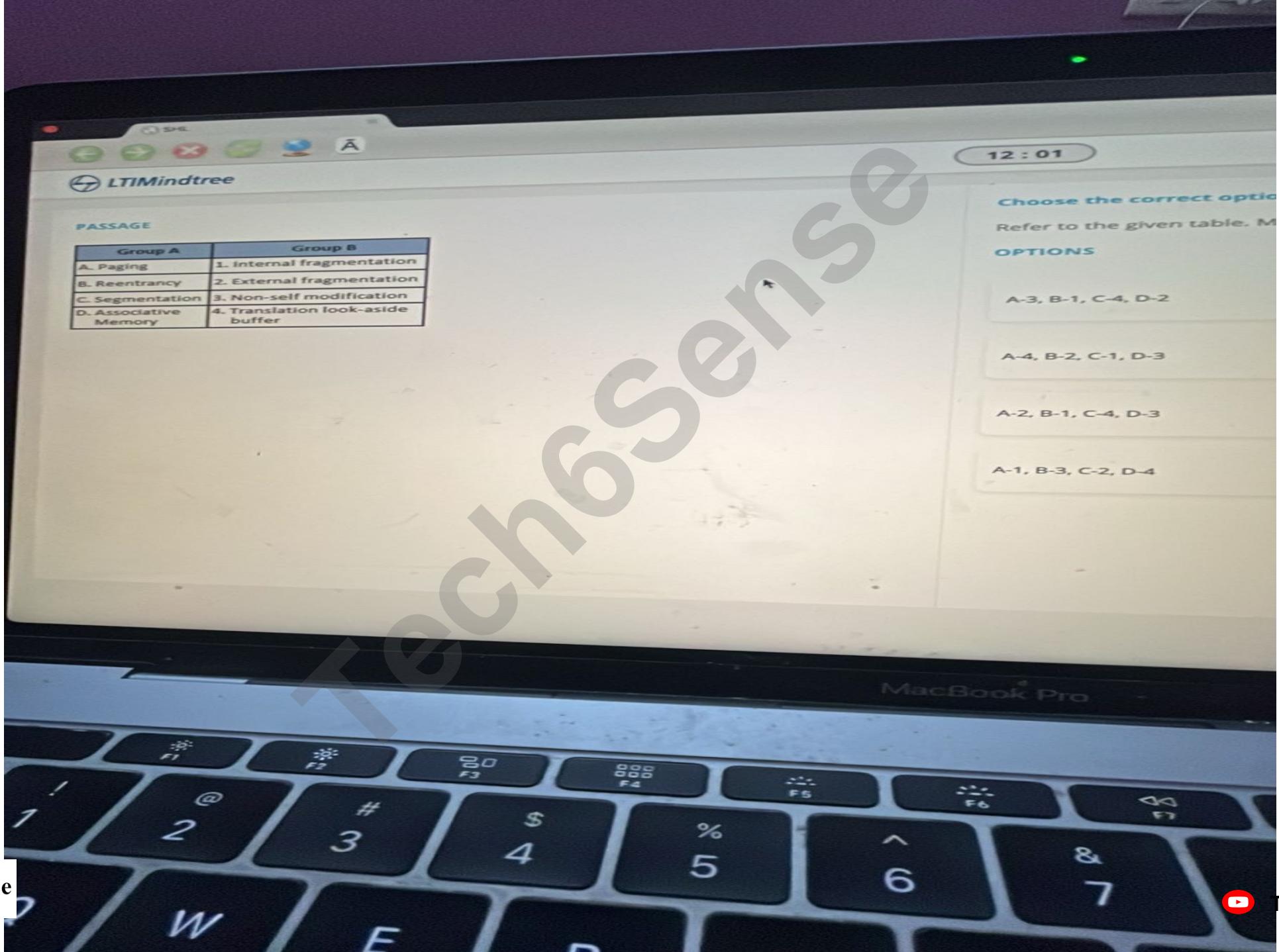
Choose the correct option.

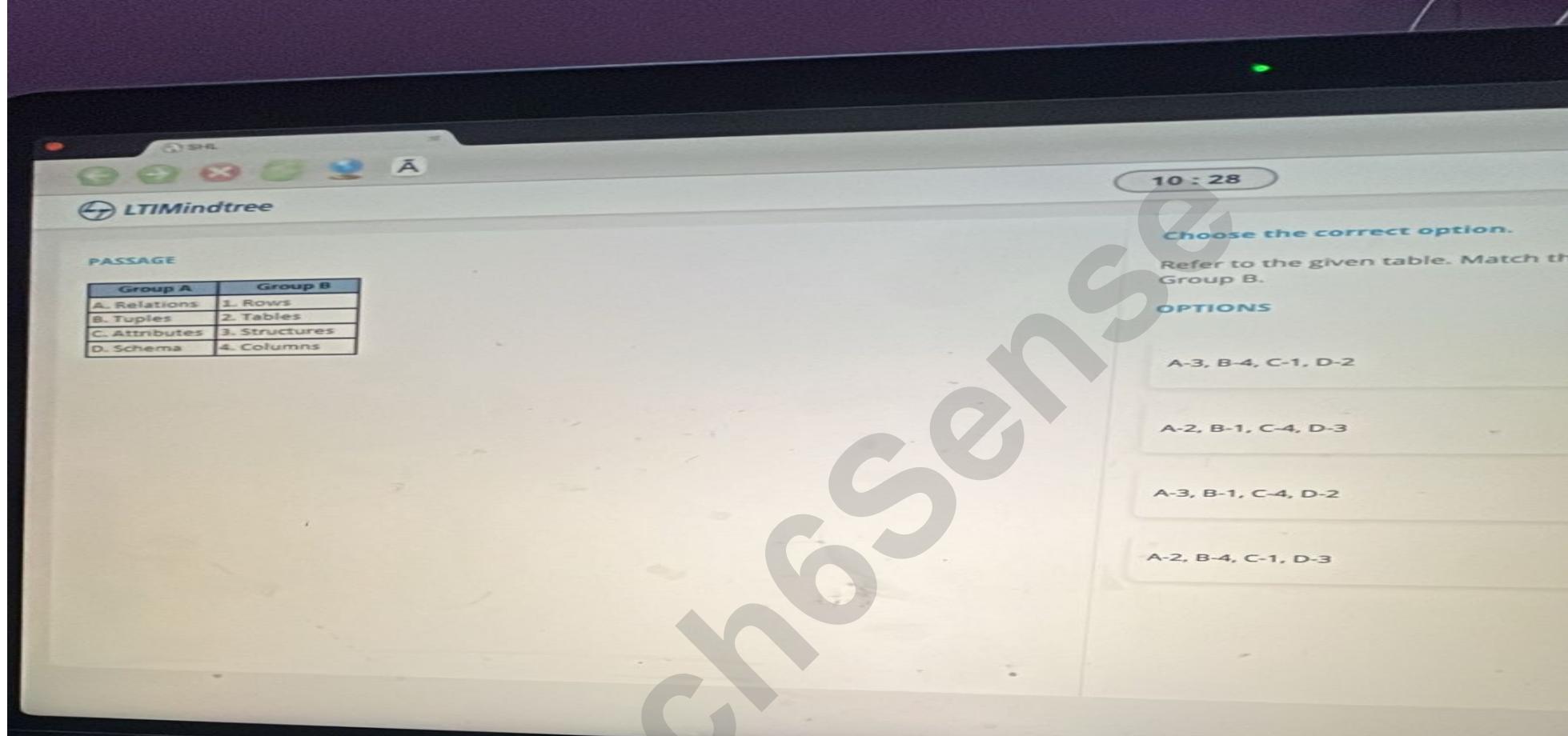
A dedicated path is needed in _____ switching before the data is sent from the sender to the receiver, but it is not needed in _____ switching.

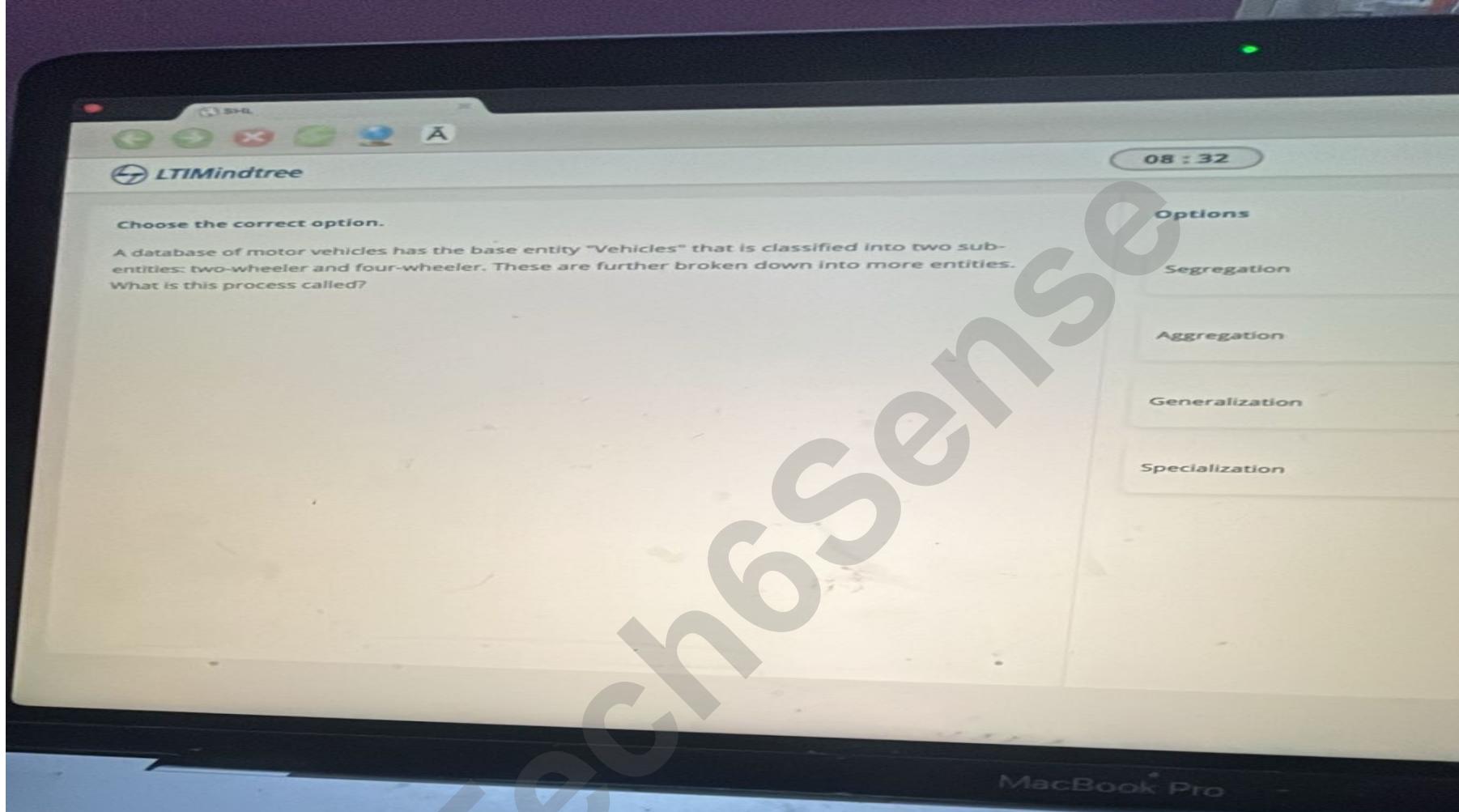
Options

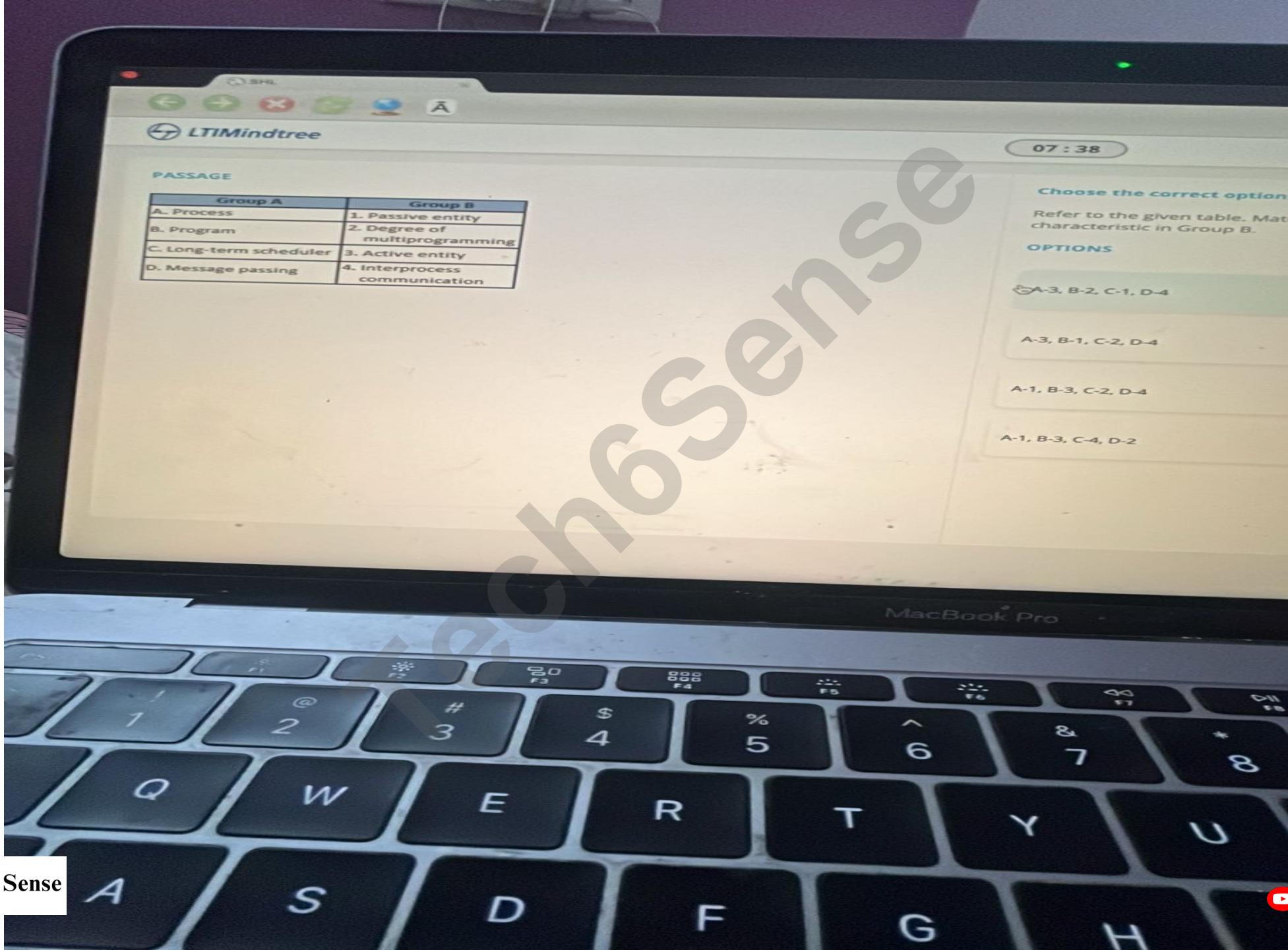
- space division, packet
- packet, time division
- packet, circuit
- circuit, packet

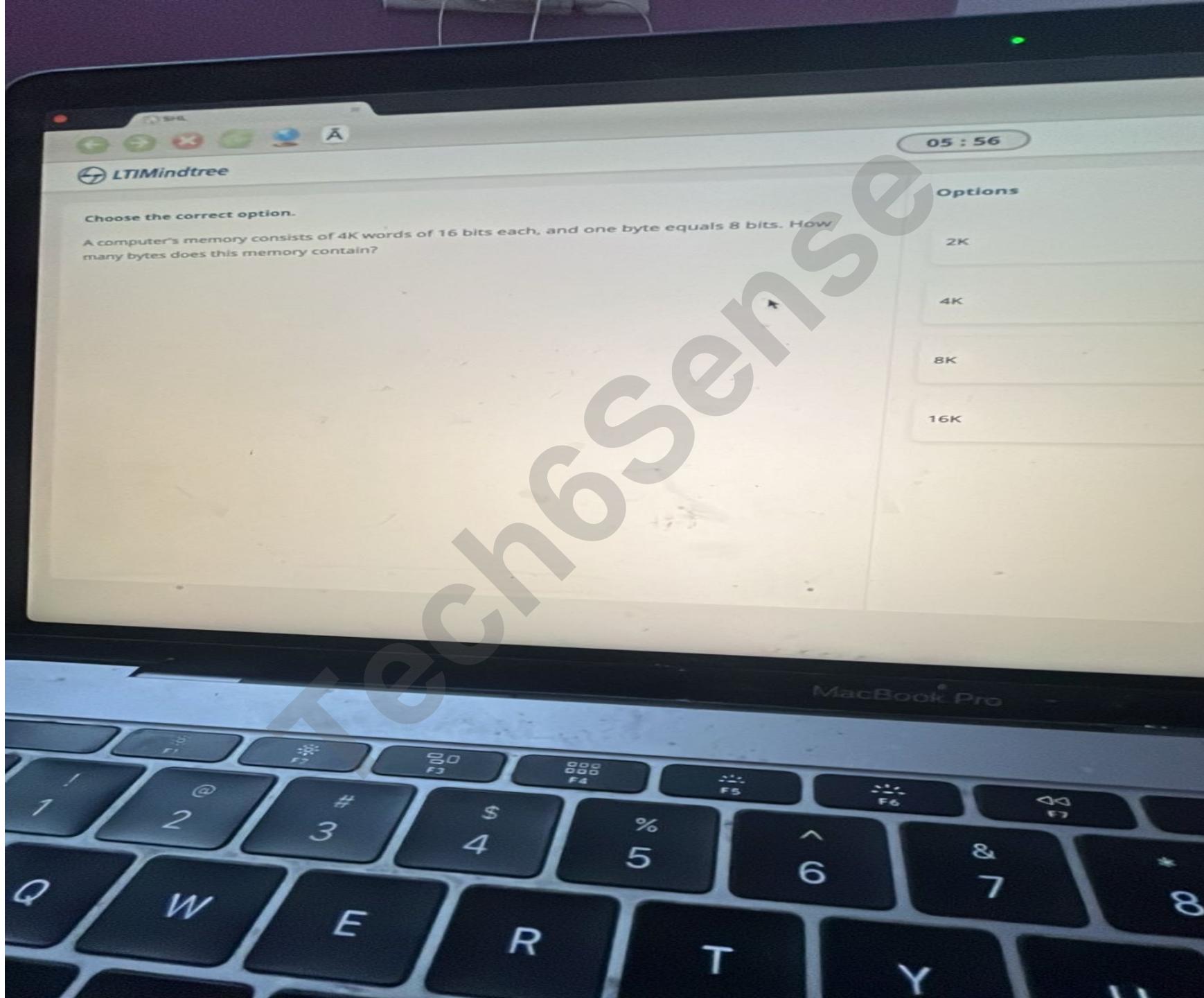












Choose the correct option.

Which of the given statements is TRUE about a "bipartite graph" with "n" nodes?

23 / 40

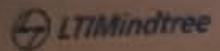
Options

It contains n edges.

It contains a cycle of odd length.

It contains no cycle of odd length.

It contains n^2 edges.



Choose the correct option.

What will be returned if $f(a,b)$ is called in the following functions?

```
function g(int n)
{
    if (n>0) return 1;
    else return -1;
}
```

```
function f(int a, int b)
{
    if (a>b) return g(a-b);
    if (a<b) return g(b-a);
    return 0;
}
```

Options

1 if $a>b$, -1 if $a<b$, 0 otherwise

Always +1

0 if a equals b , +1 otherwise

-1 if $a>b$, 1 if $a<b$, 0 otherwise

Choose the correct option.

A data type is stored as a 6-bit signed integer. Which of the given options cannot be represented by this data type?

Options

-12

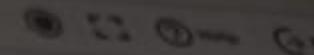
0

32

18

Choose the correct option.

01 : 34



A dedicated path is needed in _____ switching before the data is sent from the sender to the receiver, but it is not needed in _____ switching.

Options

packet, circuit

circuit, packet

packet, time division

space division, packet



Choose the correct option.

What is the name given to the function which has no memory or I/O side effects?

Options

Pure Function

Subroutine

Procedure

Method

Choose the correct option.

Options

Refer to the pseudocode given below.

```
integer a  
pointer c, d  
a = 30  
c = &a  
d = c  
a = a + 10  
print *c
```

30

4165

40

This code is used with the following meaning:

"pointer" is a data type that contains memory address (or pointers)

Statement "a = *b" puts the value at the memory address referenced by b into a

Statement "a = &b" puts the memory address of b into a

Statement "*b = a" puts the value a at the memory address referenced by b

4166

What will be the output if the compiler saves the first integer at the memory location 4165 and the rest at the consecutive memory spaces in order of declaration?
(Note: The integer is one byte long.)



Choose the correct option.

In the execution process of a program, this technique involves the intermediate representation to be compiled to native machine code at run time. What is the name of this technique?

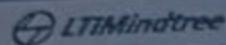
Options

Static compilation

Run time interpretation

Static interpretation

Just in time compilation



Choose the correct option.

What best describes the space complexity of a program?

20:26

Options

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 option.

What does the following function do?

```
function operation (int a, int b)
{
if(a<b)
{ return operation(b, a) }
else
{ return a }
```

Options

Returns the max of (a,b)

Returns the min of (a,b)

Loops forever

Always returns the second parameter

PASSAGE

A. Relations	1. Rows
B. Tuples	2. Tables
C. Attributes	3. Structures
D. Schema	4. Columns

Choose the correct option.

Refer to the given table. Match the database-specific terms in Group A with their synonyms in Group B.

OPTIONS

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

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

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

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

Options

Iteration

Decision-making

Object-oriented programming

Recursion

Choose the correct option.

Consider the code given below. How many times will "Hello" be printed if $m < n$ and exactly one of (m, n) is even?

```
for i = m to n increment 2  
{ print "Hello!" }
```

Options

$(n - m + 1)/2$

$1 + (n - m)/2$

$1 + (n - m)/2$ if m is even, $(n - m + 1)/2$ if m is odd

$(n - m + 1)/2$ if m is even, $1 + (n - m)/2$ if m is odd

Choose the correct option.

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

Options

$2n + 1$ nodes

$\log_2 n$ nodes

$2n - 1$ nodes

$2n$ nodes

10%

 LTIMindtree

Q1/25

Choose the correct option.

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

Options

0

1

2

 $\log n$

Choose the correct option.

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
}
```

What should substitute the condition "X"?

Options

top < N - 1

top < N

top > 1

top >= 0

Choose the correct option.

Aparajita wants to make a function that is not bound to any identifier. Which of the given functions should she incorporate in her program?

Options

Anonymous Function

Friend Function

Null Function

Global Function

Choose the correct option.

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?

Options

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



LTI Mindtree

Choose the correct option.

Code A contains a set of eight lines that occur ten times in different points of the program. This code is passed to a programmer who puts the set of eight lines in a function definition and calls them at the ten points in the program. Assume this new code to be Code B. Which code will run faster using an interpreter?

Options

Code A

Code B

Both the codes would run at the same speed

None of the above

Choose the correct option.

A class contains two integers as private members. Two member functions (public) are defined in it - one to add the two integers and another to subtract the two integers. A programmer wants to add a new functionality to enable the multiplication of the two numbers. Which of the given options should be adopted to do this?

Options

Define a third public member function that multiplies the two numbers.

Define public member functions to return the values of both the integers and then multiply them in the code. By returning the values, any operation can be performed on future, giving extensibility to the code.

Define a third private member function that multiplies the two numbers.

Define private member functions to return the values of both the integers and then multiply them in the code. By returning the values, any operation can be performed on future, giving extensibility to the code.

PASSAGE

P1	8
P2	3
P3	5

Choose the correct option.

The processes P1, P2 and P3 shown in the table arrive at the same time and are processed by the Shortest Job First (SJF) scheduling algorithm. Calculate the average wait time in milliseconds.

OPTIONS

3.6

5.6

6.3

7.3

PASSAGE

```
function main()
{
    automatic variable var
    print var
}
```

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

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

OPTIONS

0

1

Garbage Value

This code will generate a compile time error

PASSAGE

A. Process	1. Passive entity
B. Program	2. Degree of multiprogramming
C. Long-term scheduler	3. Active entity
D. Message passing	4. Interprocess communication

Choose the correct option.

Refer to the given table. Match the term related to process management in Group A with its characteristic in Group B.

OPTIONS

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

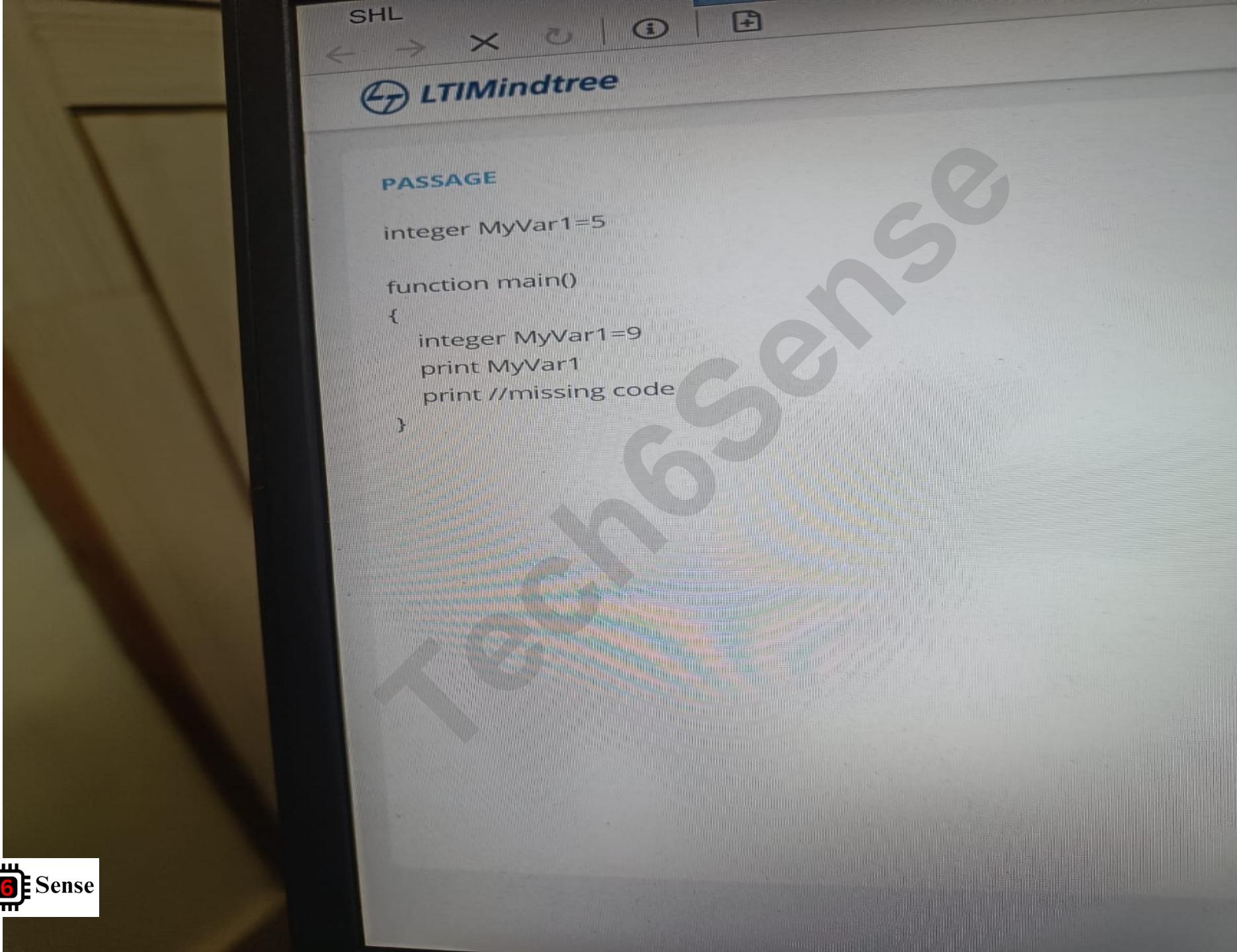


A-3, B-1, C-2, D-4

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

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





PRACTICE

Group A	Group B
A. Unicasting	1. Message is sent from a source node to a single destination node
B. Broadcasting	2. Message is sent to a subset of the network nodes
C. Multicasting	3. Message is sent to all the nodes in the network

Choose the correct option.

Refer to the given table. Match the transmission technique in Group A with its characteristic in Group B.

OPTIONS

A-1, B-3, C-2

A-1, B-2, C-3

A-2, B-1, C-3

A-2, B-3, C-1

Choose the correct option.

Which routing protocol is used to distribute routing information between different organizations and their customers?

Options

Interior Gateway Routing Protocol (IGRP)

Intermediate System-to-Intermediate System (IS-IS)

Border Gateway Protocol (BGP)

Open Shortest Path First (OSPF)

Choose the correct option.

A database of motor vehicles has the base entity "Vehicles" that is classified into two sub-entities: two-wheeler and four-wheeler. These are further broken down into more entities. What is this process called?

Options

Generalization

Aggregation

Specialization

Segregation

Choose the correct option.

What is Belady's anomaly?

Options

For some page replacement algorithms, page faults may increase as the number of allocated frames increases.

For some page replacement algorithms, page faults may decrease as the number of allocated frames increases.

For some page replacement algorithms, page faults may decrease as the number of allocated frames decreases.

For some page replacement algorithms, page faults do not depend on the number of fram

Choose the correct option.

The head of a moving head disk with 100 tracks numbered from 0 to 99 is currently serving a request at track 50. The queue of requests kept in the "first-come, first-served" order is 10, 60, 70, 40, 80. What will be the total head movement for these requests?

Options

150

160

170

180

Choose the correct option.

A data type is stored as a 6-bit signed integer. Which of the given options cannot be represented by this data type?

29 / 42

Options

-12

0

32

18

