HITBULLSEYE PROGRAMMING LEVEL1

TEST 1

DIRECTIONS for the question: Mark the best option:

Which variable has the longest scope in the following C code?

a

b

c

Both a and b

DIRECTIONS for the question: Mark the best option:

What is the output of the following program?

10 10 10

20 20 20

20 10 20

20 10 10

What will be the output of the following code?

Constructor

Constructor

Compilation Error

Runtime Error

What is the output of the following code snippet?

int arr[3] = {1, 2, 3};

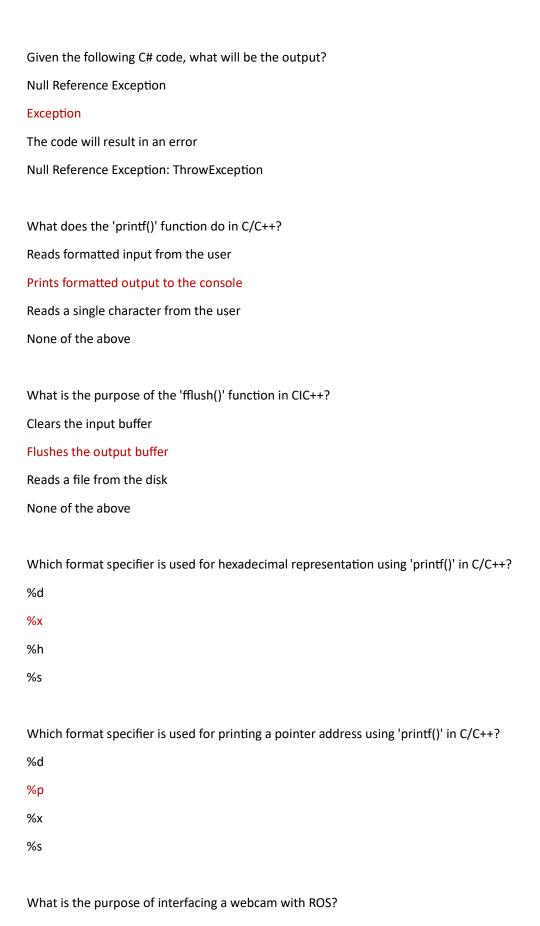int *ptr = arr;

tr++);

1

2

3

Garbage value

What is the output of the following code snippet?

int arr[5] = {1, 2, 3, 4, 5};

printf("%d" sizeof(arr) / sizeof(arr[0]));

1

2

3

5

What is the size of the array int in bytes?

1

5

15

60

What is the output of the following code snippet?

int i = 10

do {

printf("%d " i);

} while (i > 0);

10987654321

1098765432

987654321

1098765342

What is the output of the following code snippet?

int i = 5;

```
do {
printf("%d ", i);
} while (i > 0);
```

54321

4321

5432

5324

What is the output of the following code snippet?

```
int i = 0;
do {
printf("%d " ++i);
} while (i < 5);
```

12345

1234

1 1 1 1 1

2345

What is the storage class used for local variables that are shared among different function

calls?

static

auto

register

extern

In the coding realm, there's a concept of "static" variables in C. In the town of Staticville,

what is the lifetime of a static variable?

Only within the block where it's defined

Only within the function where it's defined

Throughout the program's execution

Until the program is terminated

Given the following C# code, what will be the output?

Null Reference Exception

Exception

The code will result in an error

Null Reference Exception: ThrowException

What does the 'printf()' function do in C/C++?

Reads formatted input from the user

Prints formatted output to the console

Reads a single character from the user

None of the above

What is the purpose of the 'fflush()' function in CIC++?

Clears the input buffer

Flushes the output buffer

Reads a file from the disk

None of the above

Which format specifier is used for hexadecimal representation using 'printf()' in C/C++?

%d

%x

%h

%s

Which format specifier is used for printing a pointer address using 'printf()' in C/C++?

%d

%p

%x

%s

What is the purpose of interfacing a webcam with ROS?

To capture images and videos for analysis

To control the robot's movements based on visual data

To synchronize camera data with other sensors in the robot

To stream images and videos to remote devices

Consider the following code:

mt arro = {1, 2, 3, 4, 5};

mt *ptr = arr;

*(ptr++));

What does this code snippet print?

1

2

3

4

Consider the following code:

int *ptr = arr + 2;

*ptr 10;

prmtf("%d", arr[2J);

What is the output?

1

2

3

10

In C, what is the purpose of the •calloc• function when dealing with pointers?

Allocates memory for a single variable on the heap

Allocates contiguous memory for an array on the heap and initializes it to zero.

Allocates memory on the stack for an array

Allocates memory for a constant variable

Which data structure is commonly used to implement backtracking algorithms?

Stack

Queue

Heap

Linked list

When a top-down approach of dynamic programming is applied to a problem, it usually

Decreases both, the time complexity and the space complexity

Decreases the time complexity and increases the space complexity

Increases the time complexity and decreases the space complexity

Increases both, the time complexity and the space complexity

Which of the following problems is NOT solved using dynamic programming?

0/1 knapsack problem

Matrix chain multiplication problem

Edit distance problem

Fractional knapsack problem

In a complete graph GK having n vertices, what is the number of edges E present ?

E = nC2, where C stands for combination

E = Information given is insufficient

Fractional knapsack problem is also known as

0/1 knapsack problem

Continuous knapsack problem

Divisible knapsack problem

Non continuous knapsack problem

If ' h ' is a hashing function and it is used to hash ' n ' keys into a table of size ' m ' where n

<= m . What is the expected number of collisions involving a particular key ' x ' ?

less than 1.

less than n

less than m.

less than n / 2.

Which operation is used to delete a node with a specific value from a linked list?

Insertion

Deletion

Updation

Creation

Suppose a circular queue of capacity (n — 1) elements is implemented with an array of n
elements. Assume that the insertion and deletion operation are carried out using REAR
and FRONT as array index variables, respectively. Initially, REAR = FRONT = O. The
conditions to detect queue full and queue empty are

Full: (REAR+I) mod n FRONT, empty: REAR FRONT

Full: (REAR+I) mod n FRONT, empty: (FRONT+I) mod n REAR

Full: REAR FRONT, empty: (REAR+I) mod n FRONT

Full: (FRONT+I) mod n REAR, empty: REAR FRONT

The postfix equivalent of the prefix expression * + ab - cd is

ab + cd-*

abcd +

ab + cd'-

ab + -cd*

What is the time complexity of the KMP algorithm for searching a pattern of length 'm' in a
text of length 'n'?

O(m)

O(n + m)

O(n m)