

Computer Programming

Dr. Deepak B Phatak
Dr. Supratik Chakraborty
Department of Computer Science and Engineering
IIT Bombay

Session: Quiz and Practice Questions on Pointers

Recap Quiz



Q1. Let “a” be an “int” variable declared in the “main” function. The types of the expressions “&a” and “*(&a)” are respectively

- A. int and int ***
- B. int * and int**
- C. int * and int ****
- D. int and int****

Q2. Suppose “a” and “b” are local variables declared in the “main” function. The expressions “&a” and “&b”

- A. May have the same values**
- B. Must necessarily have different values**
- C. May have the value 0x0**
- D. Must necessarily have values different from 0x0**

Recap Quiz



Q3. Let “ptrX” be a variable of type “int *” declared in the “main” function. Which of the following expressions when evaluated can give an error?

- A. &ptrX**
- B. *ptrX**
- C. *(*ptrX)**
- D. &(*ptrX)**

Q4. Memory for the local variables of a function are allocated in

- A. The stack segment**
- B. The data segment**
- C. The code segment**
- D. All of the above**

Q5. Suppose all addresses in main memory can be represented using 32 bits. Which of the following variable declarations requires 4 bytes of storage in the stack segment?

A. `char myChar;`

B. `char *myCharPtr;`

C. `char **myCharPtrPtr;`

D. `char *myCharPtrPtrPtr;`**

Practice Question 1

Consider the following program fragment:

```
int A[10] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};  
int *ptr, sum = 0;  
ptr = &(A[0]);  
for ( ; ; ) {  
    sum = sum + (*ptr);  
    if ((*ptr) < 10) {  
        ptr = &(A[*ptr]);  
    }  
    else break;  
}
```

Does the for loop terminate? If so, what is the value of sum after the loop terminates?

Practice Question 2

Consider the following program fragment:

```
int A[10] = {9, 8, 7, 6, 5, 4, 3, 2, 1, 0};
```

```
int *ptr, sum = 0;
```

```
ptr = &(A[0]);
```

```
for ( ; ; ) {
```

```
    sum = sum + ((*ptr)++);
```

```
    if ((*ptr) < 10) {
```

```
        ptr = &(A[*ptr]);
```

```
    }
```

```
    else break;
```

```
}
```

Does the for loop terminate? If so, what is the value of sum after the loop terminates?

Practice Question 3



A student wants to use a 2-dimensional character array in a program. However, the lab TAs have forbidden anybody from declaring 2-dimensional arrays in their programs.

How would you go about solving this problem? Assume that the 2-dimensional character array is of size 10 x 10

Practice Question 3 (continued)

Your solution should be such that the following C++ code compiles and runs as expected:

```
for (int i = 0; i < 10; i++) {  
    for (int j = 0; j < 10; j++) {  
        cin >> (A[i])[j];  
        cout << "Read value: " << (A[i])[j];  
    }  
}
```