Practical Lecture 1: Pointers

Quick Recap

Let's take a quick recap of previous lecture –

- Pointers

- Difference b/w pointers and reference variables

- Void pointer

- Pointer to Pointer

Today's Agenda

Today we are going to cover -

- MCQ

- Output based question

- Coding Question

Let's Get Started-

MCQ 1

1. What does the following statement mean?

    int (*fp)(char*)

a) pointer to a pointer

b) pointer to an array of chars

c) pointer to function taking a char* argument and returns an int

d) function taking a char* argument and returning a pointer to int

MCQ 1

1. What does the following statement mean?

  int (*fp)(char*)

a) pointer to a pointer

b) pointer to an array of chars

c) pointer to function taking a char* argument and returns an int

d) function taking a char* argument and returning a pointer to int

Explanation: The (*fn) represents a pointer to a function and char* as arguments and returning int from the function. So according to that, the above syntax represents a pointer to a function taking a char* as an argument and returning int.

2. The operator used for dereferencing or indirection is _____

a) *

b) &

c) ->

d) –>>

2. The operator used for dereferencing or indirection is _____

a) *

b) &

c) ->

d) –>>

Explanation: * is used as dereferencing operator, used to read value stored at the pointed address

3.What will happen in the following C++ code snippet?

```
int a = 100, b = 200;
int *p = &a, *q = &b;
p = q;
```

a) b is assigned to a

b) p now points to b

c) a is assigned to b

d) q now points to a

3.What will happen in the following C++ code snippet?
```
int a = 100, b = 200;
int *p = &a, *q = &b;
p = q;
```

a) b is assigned to a

b) p now points to b

c) a is assigned to b

d) q now points to a

Assigning to reference changes the object to which the reference is bound.

4.Void pointer can point to which type of objects?

A)int

B) float

C) double

D) all of the mentioned

Void pointer can point to which type of objects?

A)int

B) float

C) double

D) all of the mentioned

The correct statement for a function that takes pointer to a float, a pointer to a pointer to a char and returns a pointer to a pointer to a integer is _____

a) int **fun(float**, char**)

b) int *fun(float*, char*)

c) int **fun(float*, char**)

d) int ***fun(*float, **char)

The correct statement for a function that takes pointer to a float, a pointer to a pointer to a char and returns a pointer to a pointer to a integer is _____

a) int **fun(float**, char**)

b) int *fun(float*, char*)

c) int **fun(float*, char)**

d) int ***fun(*float, **char)

Function that takes pointer to a float, a pointer to a pointer to a char and returns a pointer to a pointer to a integer is int **fun(float*, char).**

```cpp
#include <iostream>
  using namespace std;

  int main()
  {
     char arr[20];
     int i;
     for(i = 0; i < 10; i++)
        *(arr + i) = 65 + i;
     *(arr + i) = '\0';
     cout << arr;
     return(0);
  }
```

Ouput

ABCDEFGHIJ

Each time we are assigning 65 + i. In first iteration i = 0 and 65 is assigned. So it will print from A to J.

Predict the ouput 2

```cpp
#include <iostream>
using namespace std;

int main()
{
    int a = 5, b = 10, c = 15;
    int *arr[ ] = {&a, &b, &c};
    cout << arr[1];
    return 0;
}
```

Ouput

it will return address of b

Predict the ouput 3

```cpp
#include <iostream>
using namespace std;

int main()
{
    int a = 32, *ptr = &a;
    char ch = 'A', &cho = ch;

    cho += a;
    *ptr += ch;
    cout << a << ", " << ch << endl;
    return 0;
}
```

129, a

Predict the ouput 4

```cpp
#include <iostream>
using namespace std;

int main()
{
    int arr[] = { 4, 5, 6, 7 };
    int* p = (arr + 1);
    cout << *arr + 10;
    return 0;
}
```

Ouput

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Coding Question

1. Write a program to print all the alphabets using a pointer.

2. Write a program to print the elements of an array in reverse order using pointer.

3. Write a program to count the number of vowels and consonants in a string using a pointer.

4. Write a program to find the maximum number between three numbers using a pointer.

Any Questions ??

Any Questions??

Thank You!

See you guys in next class.