

C++ Programming(Exercise) 5

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Pointers

- A variable that holds 'address'

ex) `int foo;`

`int *x;`

`foo=123;`

`x=&foo;` \leq value of `x` = address of `foo`

To assign a value to a pointer

- A pointer must have a value before you can dereference it.

Example(pointer variable)

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    int updates = 6;
```

```
    int* p_updates;
```

```
    p_updates = &updates;
```

```
    cout << "Values: updates = " << updates;
```

```
    cout << ", *p_updates = " << *p_updates << endl;
```

```
    cout << "Addresses: &updates =" << &updates;
```

```
    cout << ", p_updates = " << p_updates << endl;
```

```
    *p_updates = *p_updates + 1;
```

```
    cout << "Now updates = " << updates << endl;
```

```
    return 0;
```

```
}
```

Example(pointer initialize)

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    int today = 5;
```

```
    int* pt = &today;
```

```
    cout << "Value of today = " << today
```

```
        << "; Address of today| = " << &today << endl;
```

```
    cout << "Value of *pt = " << *pt << "; Value of pt = "
```

```
        << pt << endl;
```

```
}
```

Example(Arrays of Pointers)

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    int a[] = { 0,1,2 };
```

```
    int b[] = { 4,6,7 };
```

```
    int* x[2];
```

```
    x[0] = a;
```

```
    x[1] = b;
```

```
    cout << *(x[1]) << endl;
```

```
    cout << *(x[1]+2) << endl;
```

```
    cout << *(*x + 1) + 1 << endl;
```

```
    cout << *(*x)+1 << endl;
```

```
    return 0;
```

```
}
```

HW1-Q1

x	power	y	item	MIN	DAY	num	MAX	Sens
-5	1024	7	1.5	-12.0	'M'	12	1024	12

Condition	Result
<code>(x>y) && !y</code>	F
<code>(item>MIN) (DAY!='M')</code>	T
<code>((num*128)<power) &&y</code>	F
<code>(!(power!=MAX)) &&(Sens==num)</code>	T
<code>((y+x)<num) (DAY=='M')</code>	T
<code>(Sens*(!y))!=0</code>	F
<code>(!x y) &&(!y x)</code>	T

HW1-Q2

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    int a, b, c;
```

```
    cout << "Enter the first integer: ";
```

```
    cin >> a;
```

```
    cout << "Enter the second integer: ";
```

```
    cin >> b;
```

```
    cout << "Enter the third integer: ";
```

```
    cin >> c;
```

```
    cout << endl;
```

```
    if ((a > b) && (a > c)) {
```

```
        cout << "Maximum integer is " << a << endl;
```

```
    }
```

```
    else if ((b > c) && (b > a))
```

```
        cout << "Maximum integer is " << b << endl;
```

```
    else
```

```
        cout << "Maximum integer is " << c << endl;
```

```
    return 0;
```

```
}
```


HW1-Q3

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {  
    int a, sum = 0;  
    do {  
        cout << "Enter the number: ";  
        cin >> a;  
        sum = sum + a;  
    } while (a != 0);  
    cout << "Sum is " << sum << endl;  
  
    return 0;  
}
```

HW1-Q4

```
int main() {  
    int a, b, r;  
    cout << "Enter the two integers to determine the GCD : ";  
    cin >> a >> b;  
    while ((a < 0) || (b < 0)) {  
        cout << "Negative number is invalid! Enter again : ";  
        cin >> a >> b;  
    }  
    if (a < b) {  
        int temp;  
        temp = a;  
        a = b;  
        b = temp;  
    }  
    do {  
        r = a % b;  
        if (r == 0)  
        {  
            cout << "The GCD of a and b is " << b << endl;  
            break;  
        }  
        else  
        {  
            a = b;  
            b = r;  
        }  
    } while (1);  
    return 0;  
}
```