

## Experiment 2

### Reference Variables, Inline Functions

#### Example 2)

```
1  #include<iostream>
2  using namespace std;
3  inline int max(int a,int b){
4      return (a>b)?a:b;
5  }
6  int main(){
7      int i=5,j=7,k;
8      k=max(i++,j++);
9      return 0;
10 }
```

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```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/examples$ g++ examples2.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/examples$ ./1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/examples$
```

Question 7) Write macros to increment, decrement, square, find floor and ceiling of double numbers. Give few examples in which the macros don't work properly. Write inline function for all of them and call them.

```
1  #include<iostream>
2  #include <cmath>
3  using namespace std;
4  #define INCREMENT(x) ++x
5  #define DECREMENT(x) --x
6  #define SQUARE(x) x*x
7  #define FLOOR(x) floor(x)
8  #define CEIL(x) ceil(x)
9  int main(){
10     double k=10.8;
11     cout<<INCREMENT(k)<<endl;
12     cout<<DECREMENT(k)<<endl;
13     cout<<SQUARE(k)<<endl;
14     cout<<FLOOR(k)<<endl;
15     cout<<CEIL(k)<<endl;
16 }
```

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```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$ g++ 7.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$ ./1
11.8
10.8
116.64
10
11
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$
```

In the macros the decrement operation is not working as it should work.

Question 8) Write a macro that swaps the value of two variables. Write an inline function that swaps values of two integers. Call them separately and mark any cases where the macro doesn't work properly but the inline function works properly.

```

1  #include<iostream>
2  using namespace std;
3  #define SWAP(a,b) {a=a+b; b=a-b;a=a-b;}
4  inline void swap(int a,int b){
5      int temp;    temp=a;    a=b;    b=temp;
6      cout<<"The value of x is "<<a<<" and y is "<<b<<endl;
7  }
8  int main(){
9      int x=5,y=6;
10     cout<<"The value of x is "<<x<<" and y is "<<y<<endl;
11     SWAP(x,y);
12     cout<<"The value of x is "<<x<<" and y is "<<y<<endl;
13     int a=10,b=20;
14     cout<<"The value of x is "<<a<<" and y is "<<b<<endl;
15     swap(a,b);
16 }

```

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```

shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$ g++ 8.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$ ./1
The value of x is 5 and y is 6
The value of x is 6 and y is 5
The value of x is 10 and y is 20
The value of x is 20 and y is 10
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$ █

```

Question 9) Write a macro that finds maximum between 2 numbers. Write an inline function that finds maximum between 2 numbers. Call them separately and find any case where macro doesn't work but inline works properly.

```

1  #include<iostream>
2  using namespace std;
3  #define max(a,b) (a>b)?a:b
4  inline int maximum(int a,int b){
5      if(a<b){ return b; }
6      else{ return a; }
7  }
8  int main(){
9      cout<<maximum(4,1)<<endl;
10     int k=max(9,11);
11     cout<<k<<endl;
12 }

```

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```

shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$ g++ 9.cpp -o 1
^[[Ashyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$ ./1
4
11
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory2/programs$ █

```

Submitted By:- Shyam Tiwari  
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