Experiment 2
Function Overloading, ambiguities in function overloading and default argument to functions

Example 1)

```cpp
1   #include<iostream>
2   using namespace std;
3   int add(int x,int y){
4       return x+y;
5   }
6   double add(double x,double y){
7       return x+y;
8   }
9   int main(){
10      int x=add(6,5);
11      cout<<x<<endl;
12      double y=add(5.6,4.5);
13      cout<<y<<endl;
14      return 0;
15  }
```

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```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ g++ example1
.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ ./1
11
10.1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ []
```

Example 2) Execute the following two programs and see whether function overloading works or not in each case. Give satisfactory reasons.

```cpp
1   #include<iostream>
2   using namespace std;
3   void show(const int x){
4       cout<<x<<endl;
5   }
6   void show(int x){cout<<x<<endl;}
7   int main(){
8       int x;
9       const int y=10;
10      cin>>x;
11      show(x);
12      show(y);
13      return 0;
14  }
```

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```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ g++ example2.cpp -o 1
example2.cpp:6:6: error: redefinition of 'void show(int)'
    6 | void show(int x){cout<<x<<endl;}
      |      ^~~~
example2.cpp:3:6: note: 'void show(int)' previously defined here
    3 | void show(const int x){
      |      ^~~~
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ []
```

The program gave compilation error for two reason firstly it is necessary condition for c++ program that the main function return type should always be of integer type and secondly it is not possible to do function

overloading with the same return type.
Part2)

```
1   #include<iostream>
2   using namespace std;
3   void show(const char *s){  cout<<s<<endl; cout<<"Hi"<<endl; }
4   void show(char *s){  cout<<s<<endl;  cout<<"Hello"<<endl;   }
5   int main(){
6       char s[10];
7       cin>>s;
8       show(s);
9       show("Good Morning");
10      return 0;
11  }
```

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```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ g++ example3.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ ./1
shyam
shyam
Hello
Good Morning
Hi
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ []
```

Example 3)

```
1   #include<iostream>
2   using namespace std;
3   int add(int x=1,int y){   return x+y;  }
4   int main(){
5       int x=add(6);
6       cout<<x<<endl;
7   }
```

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```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ g++ example4.cpp -o 1
example4.cpp:3:21: error: default argument missing for parameter 2 of 'int add(int, int)'
    3 | int add(int x=1,int y){   return x+y;  }
      |                 ~~~~^
example4.cpp:3:13: note: ...following parameter 1 which has a default argument
    3 | int add(int x=1,int y){   return x+y;  }
      |             ~~~~^~~
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ ▮
```

Part B

```
1   #include<iostream>
2   using namespace std;
3   int add(int x,int y=1){   return x+y;}
4   int main(){   int x=add(6);    cout<<x<<endl; }
```

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```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ g++ example5.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ ./1
7
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory1/examples$ ▮
```

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Date:-