2.1

```cpp
#include <iostream>
//reference variables exp 2.1
using namespace std;
void swap(int & a, int & b){
     int t;
     t = a;
     a = b;
     b = t;
}

int main(){
     int a = 1, b= 3;
     cout<<"\n Before swap\n";
     cout<<"A = "<<a<<" B = "<<b<<"\n";
     swap(a,b);
     cout<<"\n After swap\n\n";
     cout<<"A = "<<a<<" B = "<<b<<"\n";
     return 0;
}
```

```cpp
Exp 2.2
#include <iostream>
using namespace std;
class Dog;
class Cat{
  int age;
  string name;
  public:
    Cat();
    Cat(int,string);
    void getInfo();
    inline void printDetails();
    friend void leader(Cat&, Dog&);
};
Cat :: Cat(){
  age = 0;
  name = "Nameless Cat";
}
Cat :: Cat(int x, string y){
  age = x;
  name = y;
}
void Cat::printDetails(){
 cout<<"Name:"<<name<<"\nAge:
"<<age<<"\n";
}
void Cat::getInfo(){
  cout<<"Cat Details\n----\t----\nEnter age:";
  cin>>age;
  cin.ignore();
  cout<<"Enter name:";
  getline(cin,name);
}
class Dog{
  int age;
  string name;
  public:
    Dog();
    Dog(int,string);
    void getInfo();
    inline void printDetails();
    friend void leader(Cat&, Dog&);  };
Dog :: Dog(){
  age = 0;
  name = "Nameless Cat";
}
Dog :: Dog(int x, string y){
  age = x;
  name = y;
}
void Dog::printDetails(){
 cout<<"Name:"<<name<<"\nAge:
"<<age<<"\n";
}
void Dog::getInfo(){
  cout<<"Dog Details\n-----\t-----\nEnter
age:";
  cin>>age;
  cin.ignore();
  cout<<"Enter name:";
  getline(cin,name);
}
void leader(Cat &a, Dog & b){
  //compare ages of cat and dog
  if (a.age > b.age){
    cout<<"The cat named "<<a.name<<" is
older and thus chosen to lead\n";
  }else if (a.age < b.age){
    cout<<"The dog named "<<b.name<<" is
older and thus chosen to lead\n";
  }else {
    cout<<"Both are the same age\nChoose
leader via toss\n";
  }
}
int main(){
  Cat a;
  Dog b;
  a.getInfo();
  b.getInfo();
  leader(a,b);
}
```

```cpp
Exp 2.3
#include <iostream>
using namespace std;
class Sample{
  int age;
  int marks;
  public:
    Sample();
    Sample(int,int);
    void getInfo();
    void getInfo(int, int);
    inline void printDetails();
};
Sample :: Sample(){
  age = 0;
  marks = 0;
}
Sample :: Sample(int x, int y){
  age = x;
  marks = y;
}
void Sample::printDetails(){
 cout<<" Age: "<<age<<"\n Marks: "<<marks<<"\n";
}
void Sample::getInfo(){
  cout<<"Enter age:";
  cin>>age;
  cout<<"Enter marks:";
  cin>>marks;
}
void Sample :: getInfo(int a, int b = 0){
  age = a;
  marks = b;
}
int main(){
  Sample a, b;
  a.getInfo();
  a.printDetails();
  b.getInfo(19,12);
  b.printDetails();
}
```