QN.1 Write a program that takes two or more sets as inputs and produces set operations like union, intersections difference and symmetric difference as its output.

```
⇒ # include <iostream>
  # include < stdio.h>
  using name space std;
  void union( int arr [10] ){
   cout <<"{";
   For( int i = 0; i<10 ; i++){
     int flag = 0
    For (int j = i+1; j<10 ; j++){
     if (arr [i] = = arr [j])
      { flag = 1;
       break;
      }
     if (flag = =0)
      cout <<" <<arr[i];
      }
    cout <<"}" <<endl;
    }
  void intersection (int arr [10]){
   cout <<"{"
    For (int i = 0 ; i<10; i++){
     For (int j = i+1; j <10; j++)
      {
       if (arr [i] = = arr[j] &&i!=j)
       {
        cout <<" "<<arr[i];
         }
        }
       }
      cout<<" }" << endl;
      }
cout << " Enter for elements of B:"<<endl;
for (int j = 0; j < r; j++) {
  cout << "for element "<< j+1 << ":";
  cin >> b[j];
  }
 system ("cls");
 cout << "set A is: "<<endl << "{";
 for (int i = 0; i < r; i++) {
   cout << " "<< a[i];
  }
 cout << "}"<<endl;
 cout << " set B is:"<<endl << "{";
 for (int j = 0; j < s; j++) {
  cout << " "<<b [j];
  }
  cout << "}" <<endl;
  For (int i = 0; i < r; i++){
   all [i] = a[i];
  }
  For (int j = 0; j < s; j++){
   all [j + r] = b[j];
  }
 cout << " AUB is:"<<endl;
 union (all);
 cout << "AnB is:"<<endl;
 intersection (all);
 cout << "A-B is :"<<endl;
 difference (a,b);
 cout << "A" << Char (30) << " B is: "<<endl;
  sydifference (all);
   return 0;
   }
```

QN-2 Write a program that takes two or more sets as inputs and produces their cartesian products as output.

⇒
```
#include <iostream>
using namespace std;
int main(){
int a[5], b[5], n, m;
 cout<<"Enter no. of elements for set A:";
 cin>>n;
 cout<<"Enter for set A:"<<endl;
 for(int i=0; i<n; i++){
  cout<<" for element "<<i+1<<":";
  cin>>a[i];
 }
cout<<"Enter no. of elements for set B:";
cin>>m;
 cout<<"Enter for set B:"<<endl;
 for(int j=0; j<m; j++){
  cout<<"for element"<<j+1<<":";
  cin>>b[j];
  }
cout<<"cartesian Product:";
cout<<"{";
 for(int i=0; i<n; i++){
  for(int j=0; j<m; i++){
   cout<<"("<<a[i]<<","<<b[j]<<")"<<",";
    }
    }
   cout<<"}";
    return 0;
    }
```

QN. 3 WAP that takes real no. and produce its ceiling and floor integers as output.

```
> #include <iostream>
  using name space std;
   float a;
   int b;
   cout <<" Enter integer value:";
   cin >>a;
   b=a;
   if (a<0){
   cout <<"floor value of "<<a<<" is :" <<b-1<< endl;
    cout <<"celing value of "<<a<< " is:"<<b<<endl;
    }
   if (a!=b && a>0){
   cout<<"floor value of integer "<<a<<"is:"<<b<<endl;
   cout <<"ceiling value of "<<a<<" is:"<<b+1<<endl;
    }
   if (a==b){
   cout<<"floor value of "<<a <<"is:"<< b<<endl;
   cout <<"ceiling value of "<<a<<"is:"<< b<<endl;
    }
   return 0;
   }
```

```
if (age[i]>20 && age[i]<=30){
```

Q.N.4 WAP that takes name and age of a 5 persons as an input and gives the degree of membership of the person as its output according to following using membership functions.

a) Degree of membership = 1 if age <=20
Degree of membership = (30 - age)/10 if age>20 & <=30
Degree of membership = 0 if age > 30

b) Degree of membership = 1 if age <=15
Degree of membership = (35 - age)/20 if age >15 & <=35
Degree of membership = 0 if age > 35

Perform set operations according to rules of fuzzy sets on these two sets.

```
#include <iostream>
 using namespace std;
  int main(){
   string name[5];
   double age[5], membership[5], age1[5]; membership1[5];
   cout << "Enter names:" "<<endl;
    for(int i=0; i<5; i++){
    cout <<"Name of"<< i+1<<"person:";
    cin >>name[i];
    }
   cout <<endl<< "Enter age:"<<endl;
   for(int i=0; i<5; i++){
    if (age[i] <=20){
     cout << " Degree of membership of" << name[i]
      <<" =" << 1 << endl;
      membership [i]=1;

      }
if(age[i]>20 && age[i]<=30) {
 cout<<"Degree of membership of"<<name[i]<<"~~=~~="<<
 memership[i]= (30-age[i])/10;              (30-age[i])/10<<endl;
 }
  if (age[i]>30){
   cout<<"Degree of membership of"<<name[i]<<"="<<0<<endl
   membership[i]=0;
   }
  }
  cout<<"Enter age for another set"<<endl;
  for(int i=0;i<5;i++) {
  cout<<"Age of"<<name[i]<<":";
  cin >> age1[i];
  for (int i=0;i<5;i++) {
  if age1[i]<=15) {
  cout<<"Degree of membership of"<<name[i]
     <<"="<<1<<endl;
   membership1[i]=1;
    }
   if(age1[i]>15 && age1[i]<=35){
   cout<<"Degree of membership of"<<name[i]<<"="<<
    (35-age1[i])/20 <<endl;
    membership1[i]=(35-age[i])/20;
    }
    if(age1[i]>35){
    cout<<"Degree of membership of"<<name[i]<<"="<<0;
    membership1[i]=0;

    }
    }
    difference(int a[r], int b[r]){
cout << "{";
for(int i=0; i<r; i++){
int flag=0;
for (int j=0; j<r; j++){
 if (a[i]==b[j]){
     flag=1;
    break;
  }
 }
if(flag==0){
 cout<<" "<<a[i];
 }
 }
 cout<<"}"<<endl;
}
void   sydifference (int all [10]){
  cout << "{";
  for (int i=0; i<10; i++){
   int flag=0;
  for (int j=0; j<10; j++){
   if(all [i]==all[j] && i!=j){
      flag =1;
       break;
      }
     }
    if(flag==0){
          cout<<" "<< all[i];
     }
    }
   cout<<"}";
   }
   int main(){
   int a[r], b[10], all[10];
   cout<<"Enter for set A :"<<endl;
   for(int i=0; i<r; i++){
       cout<<"for element "<<i+1<<":";
          cin>> a[i];
cout << "union of two fozzy set is"<<endl<<"{";
for(int i=0; i<5; i++){
 if (membership [i]> membership [i]){
  cout << membership [i]<<"/"<<name [i]<<",";
 }
 else {
       cout <<membership2 [i]<<"/"<<name [i]<<",";
   }
  }
 cout <<"}"<<endl;
 cout <<"Intersection of two fuzzy set is"<<endl<<"{";
 for (int i=0; i<5; i++) {
  if (membership[i] = =membership2[i]){
     cout <<membership [i] <<"/"<<name [i]<<",";
    }
  }
 cout <<"}" <<endl;
 cout <<"compliment of 1st fozzy set is"<<endl <<"{";
 for(int i=0; i<r; i++){
   cout <<(1- membership[i] )<<"/"<<name[i]<<",";
  }
 cout <<"}"<<endl;
 cout <<"compliment of 2nd fuzzy set is"endl<<"{";
 for (int i=0; i<r; i++){
 cout <<(1- membership2 [i] )<<"/"<<name[i]<<",";
  }
  cout <<"}";
  return 0;
  }
```