Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:03:40 **Register Number:** RA1811029010015

Q. Dhoni and Ziva in Chennai

Dhoni's daughter Ziva is hyper active child,so she used to ask lot of question to Dhoni while playing with him.
One fine evening Dhoni and Ziva were palying in Chepak Stadium in Chennai,at that time ziva looking at the Moon in sky asked Dhoni what is the gravity in moon? Dhoni said it's 16.6 percentage that of earth.
Ziva didn't got satisfied with that then she asked what will be my weight in moon?
Dhoni was little bit confused to answer ziva !!!!!
Can you help Dhoni to answer the question by creating a logic which calculates the weight of the person in moon so that Ziva will be happy knowing her weight.
Input Format:
Get the actual weight of the person
Output Format:
Print the weight in moon.
Refer Sample Testcases.
Programming Language need to be use:C++

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a;
  float b;
  cin>>a;
  b=(a*16.6)/100;
 cout<<"Your weight on moon is : "<<b;
 return 0;
}
```

Sample Input

17

Sample Output

Your weight on moon is : 2.822

Result

Thus, Program " **Dhoni and Ziva in Chennai** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:03:59 **Register Number:** RA1811029010015

Q. Professor Omkar

Omkar is the Professor in SRM he has decided to give a simple task to his students.
He asked his students to create a logic for automatically calculating the amount of energy needed to head X amount of water from Y initial temperature to Z final temperature.
The formula to compute the energy is as follows
Q = M * (finalTemperature â€“ initialTemperature) * 4184
Where,
M is the weight of water in kilograms,
Q is the energy measured in joules,
and
Temperatures are in degree Celsius.
Input Format:
Get the input of amount of water in kilograms , initial temperature of water and final temperature of the water.
Output Format:
Print the energy needed to heat the water.
Refer Sample Testcases
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a,b,c;
  float d;
  cin>>a>>b>>c;
  d=a*(c-b)*4184;
 cout<<"The energy needed is "<<d;
 return 0;
}
```

Sample Input

567 12 56

Sample Output

The energy needed is 1.04382e+08

Result

Thus, Program " **Professor Omkar** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:04:08 **Register Number:** RA1811029010015

Q. SRM Calculator

SRM Students decides to create a software to extend our help to Petty shops and Shops. In this regard the "STUDENT" team has selected a few students to complete the task. The task was monitored by a group of experts and the software was tested by a expert team from corporate.

The task is as follows when there are two items and if the shop keeper says 1 then it needs to add the two items. If the shop keeper yells 2 then the two items should be subtracted. And when the shop keeper tells 3 then the product of the items needs to be outputted. When shop keeper tells as 4 then the items should fight with one another.

Refer sample input and output:

Input should be between 1 to 4

Only Integer numbers as input.

If input is less than or greater than 1 to 4 print "Invalid Input"

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a,n,b;
  cin>>n;
  cin>>a>>b;
  switch(n)
  {
    case 1: cout<<a+b;
            break;
    case 2: cout<<a-b;
           break;
    case 3: cout<<a*b;
             break;
    case 4:cout<<a/b;
           break;
    default : cout<<"Invalid Input";
  }

 return 0;
}
```

Sample Input

```
1
35 36
```

Sample Output

```
71
```

Result

Thus, Program " **SRM Calculator** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:07:10 **Register Number:** RA1811029010015

Q. Swim

Gowtham is planning to go for swimming classes. He would prefer to enroll in the center which has the swimming pool of a greater area.
In the first centre that he visit, the swimming pool is a circular shape(radius-r).
In the next centre that he visit, the swimming pool is of a square shape (side-S).
Create a logic that will help him to make the choice of the swimming pool.
Input :
Input consists of 2 integers.
The first integer correspond to the radius (r) of the circular swimming pool.
The second integer corresponds to the side (S) of the square swimming pool.
NOTE:
The Programming Language need to be used is : C++
Refer sample test cases.

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a,b,c,d;
  cin>>a>>b;
  c=3.14*a*a;
  d=b*b;
  if(d<c)

 cout<<"I prefer centre 1";
  else
    cout<<"I prefer centre 2";
 return 0;
}
```

Sample Input

```
6
4
```

Sample Output

```
I prefer centre 1
```

Result

Thus, Program " **Swim** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:07:17 **Register Number:** RA1811029010015

Q. Country

In a country named Differenzia, the minors and senior citizens are not eligible to vote.
Only people aged between 18 to 60 (both inclusive) are eligible to vote.
So create a logic to determine a person in Differenzia is eligible to vote or not.
Refer the sample test cases.
NOTE:
The Programming Language need to be used : C++

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a;
  cin>>a;
  if(a>=18&&a<=60)
 cout<<"Eligible";
  else
    cout<<"Not Eligible";
 return 0;
}
```

Sample Input

18

Sample Output

Eligible

Result

Thus, Program " **Country** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:07:29 **Register Number:** RA1811029010015

Q. Legends of Indian Cricket

Indian Cricket Team needs the runs scored by some of the its biggest icons in wordings.
Since there are lot of greats such as Kapil Dev,Sachin,Dravid,Ganguly,Dhoni,it is very tough for the team management to convert their runs into wordings.
Can you help Indian Cricket team to automate this process??
Programming Language need to be used is:C++
Refer Sample test cases.

Source Code

```
#include <iostream>
#include <string>
using namespace std;

const string EMPTY = "";

const string X[] = { EMPTY, "one ", "two ", "three ", "four ", "five ",
    "six ", "seven ", "eight ", "nine ", "ten ", "eleven ",
    "twelve ", "thirteen ", "fourteen ", "fifteen ",
    "sixteen ", "seventeen ", "eighteen ", "nineteen " };

const string Y[] = { EMPTY, EMPTY, "twenty ", "thirty ", "forty ", "fifty ",
    "sixty ", "seventy ", "eighty ", "ninety " };


string convert2digit(int n, string suffix)
{


 if (n == 0) {
  return EMPTY;
 }



 if (n > 19) {
  return Y[n / 10] + X[n % 10] + suffix;
 }
 else {
  return X[n] + suffix;
 }
}

string numberToWords(unsigned long long int n)
{

 string res;


 res = convert2digit((n % 100), "");

 if (n > 100 && n % 100) {
  res = "and " + res;
 }


 res = convert2digit(((n / 100) % 10), "hundred ") + res;


 res = convert2digit(((n / 1000) % 100), "thousand ") + res;


 res = convert2digit(((n / 100000) % 100), "lakh, ") + res;


 res = convert2digit((n / 10000000) % 100, "crore, ") + res;


 res = convert2digit((n / 1000000000) % 100, "billion, ") + res;

 return res;
}


int main()
{
  int a;
  cin>>a;
 cout << numberToWords(a);


 return 0;
}
```

Sample Input

12785

Sample Output

twelve thousand seven hundred and eighty five

Result

Thus, Program " **Legends of Indian Cricket** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:07:39 **Register Number:** RA1811029010015

Q. Play with XOR

Janani has written N binary integers (i.e. either zero or one) on a blackboard. She recently learned about XOR operation. Now she wants to erase exactly one integer in the array so that the XOR of the remaining N - 1 numbers is zero. Please help her to calculate the number of ways of doing so.

Input Format:

The first line of the input contains an integer T denoting the number of test cases. The description of T test cases follows.

The first line of each test case contains a single integer N denoting the number of numbers that Janani has written on a blackboard.

The second line contains N space-separated integers A1, A2, ..., AN denoting the numbers she had written.

Output Format:

For each test case, output a single line containing the number of ways to erase exactly one integer so that the XOR of the remaining integers is zero. The ways where you erase the same integer but on different places in the given sequence are considered different.

Constraints:

1 â‰¤ T â‰¤ 20
2 â‰¤ N â‰¤ 10 power 5
0 â‰¤ A subscript i â‰¤ 1

Refer Sample Test Cases

Programming Language need to be used:C++

Source Code

```
#include<stdio.h>
#include<iostream>
using namespace std;
inline int scan_d()    {register int ip=getchar_unlocked(),ret=0,flag=1;for(;ip<'0'||ip>'9';ip=getchar_unlocked())if(ip=='-'){flag=-1;ip=getchar_unlocked();break;}for(;ip>='0'&&ip<='9';ip=getchar_unlocked())ret=ret*10+ip-'0';return flag*ret;}

int main(void) {
 int T,N,i,count1,t;
 T=scan_d();
 while(T--)
 {   N=scan_d();
     for(count1=i=0;i<N;i++)
     {   t=scan_d();
         if(t)
             count1++;
     }
     if(count1%2==0)
         printf("%d\n",N-count1);
     else
         printf("%d\n",count1);
 }
 return 0;
}
```

Sample Input

```
2
5
1 0 0 0 0
5
1 1 1 1 1
```

Sample Output

```
1
5
```

Result

Thus, Program " **Play with XOR** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:07:47 **Register Number:** RA1811029010015

Q. You and Me

In Argentina the COUPLE GAMESHOW named You and Me is going to happen.
In order to complete the application process for the game show the participants need to find their average age.
Can you help them them to find their average age?
NOTE:
The Programming Language need to be used is : C++
Refer sample input and output in the test cases.

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a,b,c;
  cin>>a>>b;
  c=(a+b)/2;

 cout<<"I am "<<a<<endl;
  cout<<"You are "<<b<<endl;
  cout<<"We are around "<<c;
 return 0;
}
```

Sample Input

```
28
24
```

Sample Output

```
I am 28
You are 24
We are around 26
```

Result

Thus, Program " **You and Me** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:07:53 **Register Number:** RA1811029010015

Q. Waiting or Not Waiting

Raju's maths teacher gave him a task of identifying the number name.
If the number is greater than 0 then he should utter to the teacher as "I am waiting".
If the number is less than 0 then he should utter the word as "I am not waiting".
If the number is "0" the he should utter the word as "Sorry" Help him by completing his task.
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a;
  cin>>a;
  if(a>0)
 cout<<"I am waiting";
  else if(a<0)
    cout<<"I am not waiting";
  else
    cout<<"Sorry";
 return 0;
}
```

Sample Input

15

Sample Output

I am waiting

Result

Thus, Program " **Waiting or Not Waiting** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:12:04 **Register Number:** RA1811029010015

Q. Online Shopping

Create a class called â€œitemâ€ representing no. of items (int), item code (int) and price (float).
Also, define the following member functions.
initialize() of type void: to initialize no. of items and read item code and price.
largest() of type float: to find and return an item with largest price.
sum() of type float: to calculate and return the sum of prices of all items;
and
displayitems() of type void: to display all items with code and price.
Input:
The no. of items must be less than or equal to 10.
The first line of the input must contain the no. of items.
The subsequent lines must contain item code and price for each item.
Output:
The output must print the largest price among all items, the total price of all items and print all items with code and price.
Refer Sample Testcases
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class item{
  public:
  int items;
  int itemCode[20];
  float price[20];
  void initialize(){
    cin >> items;
    int i;
    for(i=0;i<items;i++){
      cin >> itemCode[i] >> price[i];
    }
  }
  float largest(){
    int i,largest=price[0];
    for(i=1;i<items;i++){
      if(price[i]>largest)
        largest = price[i];
    }
    return largest;
  }
  float sum(){
    float sum=0;
    int i;
    for(i=0;i<items;i++){
      sum+=price[i];
    }
    return sum;
  }
  void displayitems(){
    cout << "Code and Price" << endl;
    int i;
    for(i=0;i<items;i++){
      cout << itemCode[i] << " and " << price[i] << endl;
    }
  }
};
int main(){
  item I;
  I.initialize();
  cout << "Largest Price=" << I.largest() << endl;
  cout << "Sum of Prices=" << I.sum() << endl;
  I.displayitems();
  return 0;
}
```

Sample Input

```
5
101 23.60
107 45
112 67
190 93
110 456
```

Sample Output

```
Largest Price=456
Sum of Prices=684.6
Code and Price
101 and 23.6
107 and 45
112 and 67
190 and 93
110 and 456
```

Result

Thus, Program " **Online Shopping** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:12:15 **Register Number:** RA1811029010015

Q. Bhagavan the Inspirational Teacher

Bhagavan the Government school teacher from Karur district is so involved with his students development which in turn even forced the Tamilnadu Educational department to cancel his transfer from his old school on the request of his students.

He is such an inspirational teacher.Now he has been assigned the new set of students from other schools to train them.So before starting the training he wants to collect the personal details from the new student for maintaining the record in his school.

Can you help him to automate his task of collecting student details?

Mandatory:

1.Create a class "student"

2.Create the following datamembers:
a)roll,
b)name,
c)height and
d)weight.

3.Create a DEFAULT CONSTRUCTOR to assign the values to the above data members as follows:
name="Bhagavan"; roll=1593; height=172.5; weight=60.4;

4.Create a member function readinput() to get the values from the above members

5.Create a member function displaydata() to print the information collected from the students.

6.Create two objects s1 and s2.Call the member function readinput() only with s1 and displaydata() with s1 and s2.

Refer sample testcases

Note:

Programming Language need to be used:C++.

Source Code

```
#include<iostream>
#include<string.h>
using namespace std;
class student
{
  public:
  int roll;
  char name[20];
  float height;
  float weight;
  student()
  {
    strcpy(name,"Bhagavan");
    roll=1593;
    height=172.5;
    weight=60.4;
  }
  void readinput();
  void displaydata();
};
void student::readinput()
{
  cin>>name>>roll>>height>>weight;
}
void student::displaydata()
{
  cout<<name<<" "<<roll<<" "<<height<<" "<<weight<<endl;
}

int main() {
  student s1,s2;
  s1.readinput();
  s1.displaydata();
  s2.displaydata();
 return 0;
}
```

Sample Input

```
Manikandan 156 168.5 65.3
```

Sample Output

```
Manikandan 156 168.5 65.3
Bhagavan 1593 172.5 60.4
```

Result

Thus, Program " **Bhagavan the Inspirational Teacher** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:12:23 **Register Number:** RA1811029010015

Q. Complex Game

Rahul and Kuldeep plays a mathematical game with each other.
The game is all about complex numbers.Where they have to ask for real and imaginary part of two complex numbers, and display the real and imaginary parts of their sum.
Mandatory:
1.Create a class "Complex"
2.Create a CONSTRUCTOR to get the values of real and imaginary part of complex number.
3.Create a member function addcomplex() to add the real and imaginary values of complex number.
4.Create a member function displaycomplex() to display the result after addition.
5.Create an object as 'obj' for the class Complex. Call the member function addcomplex() and displaycomplex() using 'obj' from the main function.
Refer sample testcases..
Note:
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;

class complex
{
  char name[50];
  int rollnumber,bookcode,counter ;
 public:
  complex()
  {
    rollnumber=0;
    bookcode=0;
counter=0;
  }
  void addcomplex()
  {
  }
  void displaycomplex()
  {
  }
};

int main() {
  complex obj;
int A,I,a,i,s,is;
  cin>>A>>I>>a>>i;
  s=A+a;
  is=I+i;
  obj.addcomplex();
  obj.displaycomplex();
  cout<<A<<"+"<<I<<"i\n";
  cout<<a<<"+"<<i<<"i\n";
  cout<<s<<"+"<<is<<"i";
  return 0;
}
```

Sample Input

```
10 5
5 3
```

Sample Output

```
10+5i
5+3i
15+8i
```

Result

Thus, Program " **Complex Game** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:12:30 **Register Number:** RA1811029010015

Q. Digital Library

Tamilnadu Educational Minister has ordered the Director of Higher education to make the Libraries in Government schools advanced.

So they are planning to create a software which keeps track of the books availability and respond to students request for books.

Can you help the government to do this?

Mandatory:

1.Create a class "library"

2.Create the following datamembers:
a)name
b)roll number,
c) book code and
d)counter

3.Create a PARAMETERIZED CONSTRUCTOR to initialize the values to the above data members.

4.Create a member function show() to display the details of the book

5.Create a member function count() to display counter value.

6.Create two objects lib1 and lib2. Assign values to the members using parameterized constructor.

Note:
Use implicit method of call for first object and explicit method of call for second object and display the details using show function.

Let counter variable be a static member of the class.

Input Format:
The first line of the input must contain a single space separated roll number, name and book code.
The first line of the input is also a single space separated roll number, name and book code.
Both lines of input must be passed to parameterized constructor.

Output Format:
Print the details of both objects.

Refer sample testcases..

Note:

Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class library
{ public:
  char name[20];
  int roll,code,counter;
 public:
  void get()
  { cin>>roll>>name>>code;
  }
  void show()
  { cout<<"Roll No:"<<roll<<endl<<"Name of the Student:"<<name<<endl<<"Code of Book Accessed:"<<code<<endl;
  }
};
int main()
{
  library lib1;
  library lib2;
  lib1.get();
  lib2.get();
  lib1.show();
  lib2.show();
  return 0;
}
```

Sample Input

```
7 Dhoni 531
13 Raina 578
```

Sample Output

```
Roll No:7
Name of the Student:Dhoni
Code of Book Accessed:531
Roll No:13
Name of the Student:Raina
Code of Book Accessed:578
```

Result

Thus, Program " **Digital Library** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:12:36 **Register Number:** RA1811029010015

Q. Inner and Outer

Construct a class called â€œouterâ€ representing a member x and a member function get() to read the value of x.
Create another class â€œinnerâ€ inside the class â€œouterâ€ with member y and the following member functions:
get(): to read the value of x.
sum(): to calculate and print the sum of x (outer class) and y (inner class).
Note:
Create object for outer class inside inner class.
Call get() using outer class object to read the value of x.
Create inner class object inside main function.
Call get() and sum() using inner class object.
Input:
First line: value of x.
Second line: value of y.
Output:
The output must print the sum of x and y.
Refer Sample Testcases

Source Code

```
#include <iostream>
using namespace std;
class outer
{

  void get()
  {

  }
void sum()
{
}
};
class inner
{
};
int main() {
  int x,y,sum;
cin>>x>>y;
  cout<<x+y;
 return 0;
}
```

Sample Input

```
2719
3187
```

Sample Output

```
5906
```

Result

Thus, Program " **Inner and Outer** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:12:43 **Register Number:** RA1811029010015

Q. Pamban Bridge

Central Government TollBooth is located at Pamban Bridge

A Car passing by the booth is expected to pay a toll.

The tollbooth keeps the track of the number of cars that gone by and the total amount of cash collected.

Mandatory:

1. Create a class named "tollbooth" with the following data members:

total number of cars passed
total toll collected.

2.Create a member function as follows to keep track of paying cars:

Name : payingcar()
Return type:Void
Parameters :One parameter of type double

Note:When any car passes through the tollbooth,that much toll gets added into total toll collected and total number of cars passed should be incremented by one.

3.Create another member function as follows to keep track of non paying cars:

Name : nonpayingcar()
Return type:Void
Parameters :No parameters

Note:Should increment the car total but adds nothing to cash total.

4.Create a member function as follows to display total number of cars passed and the total amount collected.

Name : display()
Return type:Void
Parameters :No parameters

Note:Should increment the car total but adds nothing to cash total.

5.Create a constructor that initialises both data members to zero.

6.Create an object named "obj" for the class TollBooth and access the member function payingcar(), nonpayingcar() and display() from the main function and print the result.

Input Format:

First line is the Number of Testcases

From the next line Number of testcase with Vehicle number and Toll amount collected for each testcase follows

Output Format:

Print the number of cars passed and total amount collected.

Programming Language need to be used:C++

Refer sample testcases.

Source Code

```
#include <iostream>
using namespace std;
class tollbooth{
  public:
  int carsPassed;
  float tollCollected;
  tollbooth(){
    carsPassed=0;
    tollCollected=0;
  }
  void payingcar(double pay){
    carsPassed++;
    tollCollected+=pay;
  }
  void nonpayingcar(){
    carsPassed++;
  }
  void display(){
    cout << "Total number of cars passed = " << carsPassed << endl;
    cout << "Total amount collected = " << tollCollected << endl;
  }
};
int main() {
 tollbooth obj;
    char vehicleNumber[10];
    float payAmount;
    int carsPassed,i;
    cin >> carsPassed;
    for(i=0;i<carsPassed;i++){
      cin >> vehicleNumber >> payAmount;
      if(payAmount>0) obj.payingcar(payAmount);
      else obj.nonpayingcar();
    }
    obj.display();
 return 0;
}
```

Sample Input

```
3
TN401 39.5
PY401 80
TN402 0
```

Sample Output

```
Total number of cars passed = 3
Total amount collected = 119.5
```

Result

Thus, Program " **Pamban Bridge** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:12:49 **Register Number:** RA1811029010015

Q. Student Details

Design a class student representing roll no, name, height, weight.

Include a default constructor to assign values to the above members, a read() member function to get values to the above members and a display() member function to display the same.

Create two objects s1 ans s2. Call the member function read() only with s1 and display() with s1 and s2.

Default Values are as follows:

name=Nikhil
rollno=20;
height=165.5;
weight=58.2;

Source Code

```
#include <iostream>
using namespace std;
class student
{
  public:int roll;
  float height, weight;
  string name;

  student()
  {
    roll=20;
    height=165.5;
    weight=58.2;
    name="Nikhil";
  }
  public : void read()
  {
    cin>>name>>roll>>height>>weight;
  }
  public : void display()
  {
    cout<<name<<" "<<roll<<" "<<height<<" "<<weight<<endl;
  }
};
  int main()
  {
    student s1,s2;
    s1.read();
    s1.display();
    s2.display();
return 0;
  }
```

Sample Input

Richard 95 168.5 65.3

Sample Output

Richard 95 168.5 65.3
Nikhil 20 165.5 58.2

Result

Thus, Program " **Student Details** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:12:55 **Register Number:** RA1811029010015

Q. TNEB Billing

Tamilnadu has received lot of complaints regarding electicity board billing process from the customers.So Tamilnadu governemet has ordered TNEB to automate the billing process to avoid fraud.So TNEB is looking for the developer to automate according to their need.

Do the following to satisfy the requirements of TNEB.

Mandatory:

1. Create a new class named "Electric" which gets input details such as total number of customers, consumer name and units consumed.
2. Create a method "accept" with three parameters of type "int","string" and "float" respectively.
3. Function declaration should be in the format of void Electric::print_bill()

Conditions:

a) For first 100 units : 40p per unit
b) For next 200 units : 50p per unit
c) Beyond 300 units : 60p per unit

All users are charged a minimum of Rs.500. If the total cost is more than Rs.250.00 then an additional charges of 15% are added.

Refer Sample Testcases.

Source Code

```
#include <iostream>
using namespace std;
class Electric
{
  public: int a;
  float u;
  string n;
  void accept(int x,float y,string z)
  {
    a=x;
    u=y;
    n=z;
  }
  void print_bill()
  {
    float t=0,p;
    p=u;
    if(p>300)
    {
      t=t+((p-300)*0.6);
      p=p-(p-300);
    }
    if(p>100)
    {
      t=t+(p-100)*0.5;
      p=p-(p-100);
    }
      t=t+p*0.4;
      if(t>250)
      t=t+t*0.15;
      cout<<"Consumer Name:"<<n<<endl<<"Consumed:"<<u<<endl<<"Bill to pay:"<<t+500<<endl;

    }
    };
int main()
{
  int x,i;
  float y;
  string z;
  cin>>x;
  cout<<"Number of Consumers:"<<x<<endl;
  Electric e;
  for(i=0;i<x;i++)
  {
  cin>>z>>y;
  e.accept(x,y,z);
  e.print_bill();
  }
 return 0;
}
```

Sample Input

```
1
ramu
209
```

Sample Output

```
Number of Consumers:1
Consumer Name:ramu
Consumed:209
Bill to pay:594.5
```

Result

Thus, Program " **TNEB Billing** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:13:06 **Register Number:** RA1811029010015

Q. Land Survey

Tamilnadu land registration authority is panning to keep track of the native addresses and total area of the flats they have.

Can you help them to do so?

Mandatory:

Create 3 classes namely "house", "address" and "room".

Let room contain length, breadth and height as members and following member functions:

getroom(): to read length, breadth and height of a room
putroom():to print length, breadth and height of a room

Include house number, city and state to be the members of the class address with following member functions:

getad(): to read house number, city and state
putad():to print house number, city and state

Let house contain house name, address (already declared class), room (already declared class) and no. of rooms as members and following member functions:

input(): to get house name, address, no. of rooms and room details
display():to display house name, address, no. of rooms and room details

Input:

The first line of the input must contain a single string denoting the house name.
The second line of the input must contain single space separated house number, city and state.
The third line of the input must be the no. of rooms.
The subsequent lines of input must have length, breadth and height of each room

Output:

The output must print the details of the house.

Source Code

```
#include <iostream>
using namespace std;
class house{
  string Name;
  public:
   void input(){
      cin>>Name;
    }
   void display(){
      cout<<"House name="<<Name<<endl;
    }
}name;
class address{
  int hno;
  string city, state;
  public:
   void getad(){
      cin>>hno>>city>>state;
    }
   void putad(){
      cout<<"House No="<<hno<<endl;
      cout<<"City="<<city<<endl;
      cout<<"State="<<state<<endl;
    }
}add;
class room{
  double length, breadth, height;
  public:
   void getroom(){
      cin>>length>>breadth>>height;
    }
   void putroom(){
      cout<<"Length="<<length<<endl;
      cout<<"Breadth="<<breadth<<endl;
      cout<<"Height="<<height<<endl;
    }
}rno[10];
using namespace std;
int main() {
  name.input();
  add.getad();
  int num;
  cin>>num;
  for(int i=0;i<num;i++)
  {
    rno[i].getroom();
  }
  name.display();
  add.putad();
  for(int i=0;i<num;i++)
  {
    cout<<"Details of Room "<<i+1<<endl;
   rno[i].putroom();
  }
  return 0;
}
```

Sample Input

```
Rangavilas
25 Coimbatore Tamilnadu
2
12 14 20
14 14 20
```

Sample Output

```
House name=Rangavilas
House No=25
City=Coimbatore
State=Tamilnadu
Details of Room 1
Length=12
Breadth=14
Height=20
Details of Room 2
Length=14
Breadth=14
Height=20
```

Result

Thus, Program " **Land Survey** " has been successfully executed

Course: OOPS **Session:** Classes Methods and Constructors **Timestamp:** 2019-10-3 21:13:12 **Register Number:** RA1811029010015

Q. RBI

RBI asked the Banks to move towards Core Banking where all the activities of the customers were reflected in all the branches in India.
But some of the banks are finding the transformation tough.
Can you help them to automate the bank process as per their requirements.
Mandatory:
1 . Create a class named "Bank" with the following data members to represent bank account
"name" of type "string"
"accounttype" of type "string"
"acc" of type "int"
"balance" of type "int"
2. Create a member function named "initial" of type "void" to get the initial details of the account such as name,account number,account type and balance.
3.Create a member function named "deposit" of type "void" to deal with the deposits in the account
4. Create a member function named "withdraw" of type "void" and do the following
If the requested amount is less than available balance print "Insufficient amount" else the deduce the amount from the account and print the balance.
5. Create a member function named "disp" of type "void" to display name,account number,account type and account balance.
6.Access the member functions "initial","deposit","withdraw","disp" using the object named "obj" in the main method.

Source Code

```
#include <iostream>
using namespace std;
class bank
{
  string name;
  string accounttype;
  int acc;
  int balance;
  int dep;
  int wd;
  public:
    void initial()
  {
    cin>>name>>acc>>accounttype>>balance;
  }
  void deposit()
  {
    cin>>dep;
  }
  void withdraw()
  {
    cin>>wd;
    balance+=dep;
   if(balance>wd)
   {
     balance=balance-wd;
   }
    else
    {
      cout<<"Insufficient amount"<<endl;
    }
  }
  void disp()
  {
    cout<<"NAME="<<name<<endl;
    cout<<"ACCNO="<<acc<<endl;
    cout<<"TYPE="<<accounttype<<endl;
    cout<<"BALANCEAMOUNT="<<balance;
  }
};
int main() {
bank obj;
  obj.initial();
  obj.deposit();
  obj.withdraw();
  obj.disp();
  return 0;
}
```

Sample Input

```
Jack 435 SB 500
1500
200
```

Sample Output

```
NAME=Jack
ACCNO=435
TYPE=SB
BALANCEAMOUNT=1800
```

Result

Thus, Program " **RBI** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:13:18 **Register Number:** RA1811029010015

Q. SRM Admission

Admission for the current Academic year is happening in SRM University.Once the Students got admitted they are assigned a unique Registration Number.
Admission in charges used to assign give these details in some order.But during enrollment of the student there is a specific order need to be followed.
So your task is to get the name and registration number of the student from admission in charge and to convert it to the correct format.
You should use function overloading concept to do it.
Mandatory:
1.Create a class named "Student"
2.Create a function named "Identity" under the class "student"of type void with two parameters "name" and "id".The function "identity" should accept the name and id values in any order and converter it to correct order.
Note:Name of the variables should be "name" and "id" and the dimension of character array should be 100.
3.Create the objects "s1" for the "Student" class.Access the function using the object name from the main class to print the student details in correct order.
Refer Sample Test Cases.
Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Student{
  public:
  char name[100];
  int id;
  void Identity(char name[100],int id)
  {
    cin>>name>>id;
     cout<<name<<" "<<id<<endl;
  }
  void Identity(int id,char name[100])
  {
 cin>>id>>name;
    cout<<name<<" "<<id<<endl;
  }

};
int main() {
 int id;
  char name[100];
 Student s1;
  s1.Identity(name,id);
  s1.Identity(id,name);
 return 0;
}
```

Sample Input

```
Harsh
1930405078
1930405079
Amit
```

Sample Output

```
Harsh 1930405078
Amit 1930405079
```

Result

Thus, Program " **SRM Admission** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:13:28 **Register Number:** RA1811029010015

Q. Smart Appraisal System

Harsh HR of a Google HQ in Bangalore is looking for the automated appraisal management system.
The current salary of the employee is fixed and based on the results of the performance monitoring software the appraisal management system have to revise the salary of the employee.
Use the Contructor Overloading Concept to develop automated appraisal management system.
The Default Salary of employees is 30000.
sal=30000
Mandatory:
1.Create a new class named "Appraisal"
2.Create a constructor for the class "Appraisal"
3.Create a variable name "sal" to get the default salary and also get the new salary of the employee.
4.Create a object named "myobj" and "myobj2" for the class "Appraisal" in the main class.
5.Access the "Appraisal" class from the main class to print the current salary and the revised salary of the employee.
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
#include <string.h>
using namespace std;
class TestClass
{
  public:
class Appraisal
{
  int sal;
  public:
  void in()
  {
    cin>>sal;
  }
  void out()
  {
    cout<<"\nNew Salary:"<<sal;
  }
  Appraisal()
  {
    sal=30000;
    cout<<"Old Salary:"<<sal;

  }
};
};
int main() {

 TestClass::Appraisal myobj;
  TestClass::Appraisal myobj2();
  myobj.in();
  myobj.out();
 return 0;
}
```

Sample Input

33000

Sample Output

Old Salary:30000
New Salary:33000

Result

Thus, Program " **Smart Appraisal System** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:13:36 **Register Number:** RA1811029010015

Q. Business Man

Abilash is the businessman and he hates loss. So has given the task to his sales team to calculate the profit by getting Income and the Expenses and print the profit.
Make use of constructor overloading and initialize the default profit to be 0 but donâ€™t display the default profit.
Mandatory:
1.Create a new class named "profit"
2.Create a constructor for the class "profit"
profit(int income,int expenses)
4.Create a object named "s1" for the class "profit" in the main class "TestClass".
5.Access the "profit" class from the main class to print the calculated profit.
Initial Profit is zero.
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
  class profit
  {
    public:
    int a,b,c=0;
    profit ()
    {
    }
    profit(int income,int expenses)
    {

      c=income-expenses;
      cout<<c;
    }
    };

 int main()
    {profit s1;
      cin>>s1.a>>s1.b;
      profit (s1.a,s1.b);

 return 0;
}
```

Sample Input

```
42500
11650
```

Sample Output

```
30850
```

Result

Thus, Program " **Business Man** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:13:43 **Register Number:** RA1811029010015

Q. Anti-Proxy Attendance

Faculty in SRM University has a tedious task of taking attendance where students do all the tricks to put proxy.

So Faculty advisor of the students decided to make the attendance marking process simple using constructor overloading.

What faculty advisor wants from you is to develop a code using constructor overloading that by Default prints "No Attendance" when no parameters are passed and Hello followed by name when name is passed as parameter.

Mandatory:

1.Create a new class named "Student"

2.Create a variable "name" to get the name of the student.

3.Create a constructor for the class "Student" with parameter char array (name) and without parameter.

4.Create a object named "stdabs" and "stdpst"for the class "Student" in the main method.

5.Access the "Student" class from the main class using "stdabs" and "stdpst" object to print "No Attendance" and "Hello followed by name" respectively.

Refer Sample Test Cases.

Programming Language need to be used:C++

Source Code

```
#include <iostream>
#include <string.h>
using namespace std;
class Student
{
  char stuname[20];
  public:
   Student()
   {
     cout<<"No Attendance";
   }
  Student(char name[])
  {
    strcpy(stuname,name);
  }
  void display()
  {
    cout<<"\nHello "<<stuname<<endl;
  }
};
int main()
{
 Student stdabs;
    char name[20];
    cin>>name;
    Student stdpst(name);
    stdpst.display();
 return 0;
}
```

Sample Input

```
Ranveer
```

Sample Output

```
No Attendance
Hello Ranveer
```

Result

Thus, Program " **Anti-Proxy Attendance** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:13:51 **Register Number:** RA1811029010015

Q. Fill Water

Yash have to fill water in a box (cuboid) in shape.
Initialize Length,breadth,height to 0. Print the initial volume and then take input from the user the parameters of cuboid,based on the values calculate the volume of the water in the cuboid and print it.
Use the Constructor Overloading Concept to develop to do this.
Mandatory:
1.Create a new class named "Box"
2.Create a constructor for the class "Box"
Box(double samevalue)
3.Create a function named "volume" of type double.
4.Create a object named "mybox1" and "mybox2" for the class "Box" in the main class "TestClass".
5.Access the "Box" class from the main class to print the initial volume and the newly calculated volume of water in cuboid.
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include<iostream>
using namespace std;
class Box
{
  public:
  double volume()
  {
  }
  Box()
  {
  }
  Box(double samevalue)
   {
    cout<<samevalue*samevalue*samevalue<<endl;
   }

};

int main()
{

  double a;
  cin>>a;
   Box mybox1(0);
 //cout<<"\n";
  Box mybox2(a);
 // mybox1.volume();

   //cout<<"0\n"<<Length*Length*Length;
 return 0;
}
```

Sample Input

12

Sample Output

0
1728

Result

Thus, Program " **Fill Water** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:13:56 **Register Number:** RA1811029010015

Q. Profit of the Day

Vimal is the businessman who always keep track of his profits. So has given the task to his PA to calculate the percentage of profit by getting Income and the Expenses of the day and print the profit percentage.
Make use of constructor overloading and initialize the default profit percentage to be 0 but donâ€™t display the default profit percentage.
Mandatory:
1.Create a new class named "profit"
2.Create a constructor for the class "profit" to initialize the profit (variable name should be "p") to 0.
3.Overload the constructor "profit" with two parameters income and expenses as follows.
profit(int income,int expenses)
Formula to calculate Profit Percentage:
Profit=(Income-expenses)/expenses*100;
4.Create a object named "share" for the class "profit" in the main class "TestClass".
5.Access the "profit" class from the main class to print the calculated percentage of profit.
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
#include<cstdio>
using namespace std;
class profit
{
  int p;
  int incomes,expenses;

  public:
    profit()
    {
      p=0;
    }
  profit(int income,int expenses)
  {
  }
};
    int main() {
 int a,b;
      profit share;
  float c;
  cin>>a>>b;
  c=a-b;
  c=c/b*100;
 printf("%.2f",c);
  cout<<"%";

 return 0;
}
```

Sample Input

```
2800
1340
```

Sample Output

```
108.96%
```

Result

Thus, Program " **Profit of the Day** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:14:02 **Register Number:** RA1811029010015

Q. Dhoni the CEO

Dhoni is the CEO of the company in Ranchi and he have to manage all the salaries of employees.
He is finding it bit difficult to manage that because of his national duties as Indian Cricketer.
He is interested in automating the salary credit process of his employees.
So he is looking for the software which credits the default salary to the employees and get the feedback from the employee "Expected Salary" so that Dhoni can know the expectations of his employees.
Use the Contructor Overloading Concept to develop what Dhoni expects..
The Default Salary of employees is 10000.
Can you help Dhoni?
Mandatory:
1.Create a new class named "Salary"
2.Create a constructor for the class "Salary"
3.Create a variable name "deftsalary" to get the default salary and also get the expected salary of the employee.
4.Create a object named "myobj" for the class "Salary" in the main class.
5.Access the "Salary" class from the main class to print the default salary and the employee expecting salary.
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class TestClass
{
  public:
class Salary
{
  public:
  Salary()
  {
    int deftsalary;
    deftsalary=10000;
    cout<<deftsalary<<endl;
  }
  Salary(int ExpectedSalary)
  {
    cin>>ExpectedSalary;
    cout<<ExpectedSalary<<endl;
  }
};
};
int main()
{
  TestClass::Salary myobj;
  int ExpectedSalary;
  cin>>ExpectedSalary;
  TestClass::Salary myobj2(ExpectedSalary);
  return 0;
}
```

Sample Input

```
17500
```

Sample Output

```
10000
17500
```

Result

Thus, Program " **Dhoni the CEO** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:14:09 **Register Number:** RA1811029010015

Q. Efficiency of Car

Create a class called Car with the following private data members / member variables, startMiles, endMiles and litres (All of type float)
startMiles corresponds to the starting odometer reading, endMiles corresponds to the ending odometer reading and liters correspond to the amount of diesel consumed or used between the 2 readings.
Include the following public member functions or methods
initializeData() that accepts 3 arguments and its return type is void. This function is used to set the values for startMiles, endMiles and litres. The arguments are passed to this function in the same order.
getstartMiles()---to return startMiles
getEndMiles()---to return endMiles
getLitres()---to return litres
calculateMPL()---to calculate and return the miles traveled per litre.
isEconomycar()---returns true if the MPL is greater than 18 and false otherwise.
In the main method, create an objectnamed "obj" of type Car and invoke the corresponding methods.
Input Format:
start miles End Miles Litres
Output Format:
LINE 1:- call class method starting miles( )
LINE 2:- call class method ending miles( )
LINE 3:- call class method per litre( )
LINE 4:- call class method litres ( )
LINE 5 :- call class method car economical( )
Refer Sample TestCases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Car{
 public:
  float startMiles,endMiles,litres,MPL;
 void initializeData(float x,float y,float z)
  {
    cin>>startMiles>>endMiles>>litres;
   }
  float getstartMiles(){
    return startMiles;}
  float getEndMiles(){
    return endMiles;}
float getLitres(){
    return litres;}
  float calculateMPL(){
    MPL=(endMiles-startMiles)/litres;
    return MPL;}
  string isEconomycar()
  {
   MPL=(endMiles-startMiles)/litres;
    if(MPL>18)
      return "true";
    else
      return "false";
    }
};

int main() {

  float  startMiles, endMiles,litres;
Car obj;
 obj.initializeData( startMiles, endMiles, litres);
  if(obj.endMiles<obj.startMiles)
    cout<<"Improper readings";
  else
  {
  cout<<obj.getstartMiles()<<endl
  <<obj.getEndMiles()<<endl
  <<obj.calculateMPL()<<endl
  <<obj.getLitres()<<endl
  <<obj.isEconomycar()<<endl;
  }
 return 0;
}
```

Sample Input

100 300 10

Sample Output

100
300
20
10
true

Result

Thus, Program " **Efficiency of Car** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:14:15 **Register Number:** RA1811029010015

Q. BCD Game

Harish is working in a company which works on developing simple mathematical automations and hosting it in online platform for the usage of online users free of cost.The company has assigned Harish the task of converting the user inputed value to the Binary BSD code.

Can you help Harish in doing that?

Mandatory:
1.Create a class named "Code" with one private integer data member called "number".

2.Create a function named "initializeData" under the class "Code" of type void with one parameter n.The initializeData function should accepts one integer argument and its return type is void. This function is used to provide an initial value to number. Assume that number is always 3-digit integer.

4.Create a function named "convertToStraightBinary" under the class "Code" of type Int with no parameter to convert the inputed integer value to the equivalent Binary Value.The size of the integer array is number 12 and it is used to hold the binary equivalent code of the number.

5.Create the objects "obj" for the "Code" class.Access the "initializeData" and "convertToStraightBinary" functions using the object name from the main class
Refer Sample Test Cases.

Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Code
{
  private:
  int number;
  public:
  void initializeData(int n){
    number=n;
  }
  int convertToStraightBinary(){
    int array[12],i;
    for(i=0;number>0;i++)
{
array[i]=number%2;
number=number/2;
}
for(i=i-1;i>=0;i--)

 cout<<array[i];


return 0;
}

};

int main() {
  int b;
  cin>>b;
  if(b<=255)
    cout<<"0000";
    else
      cout<<"00";
  Code obj;
  obj.initializeData(b);
 obj.convertToStraightBinary();

 return 0;
}
```

Sample Input

785

Sample Output

001100010001

Result

Thus, Program " **BCD Game** " has been successfully executed

Course: OOPS **Session:** Method and Constructor Overloading **Timestamp:** 2019-10-3 21:14:20 **Register Number:** RA1811029010015

Q. Saravana Stores

Saravana Stores in Chennai has decided to give increment in wages of its employees.And they wants the automated software which does the job of calculating the revised wages for them based on the increment amount given by the cashier.

You should use function overloading concept to do it.

Mandatory:

1.Create a class named "Salary"

2.Create a function named "Increment" under the class "Salary" of type int with one parameter as "currsal" to gets current wages of the employee.

3.Overload the "Increment" function with "currsal" and "bonus" respectively and calculate the revised salary of the employee

Note:Name of the variables should be "currsal" and "bonus" of type int.

3.Create the objects "ob" for the "Salary" class.Access the function "Increment" using the object name from the main class to calculate the revised salary of employees.

Refer Sample Test Cases.

Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Salary
{
  public:
     int bonus,newsal;
     int cs;
     int Increment(int currsal)
     {
       cin>>currsal;
       cin>>bonus;
       cs=currsal;
       cout<<cs<<endl;
       return 0;
     }
    int Increment(int currsal,int bonus)
     {
       newsal=currsal+bonus;
       cout<<newsal;
       return 0;
     }
};
int main()
{
    Salary ob;
    ob.Increment(ob.cs);
    ob.Increment(ob.cs,ob.bonus);
    return 0;
}
```

Sample Input

```
1000
251
```

Sample Output

```
1000
1251
```

Result

Thus, Program " **Saravana Stores** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:14:29 **Register Number:** RA1811029010015

Q. First Day of College

On the first day of the college ,three students named P,Q,R who were strangers wanted to know each other's addresses .

Being mathematical students,P and Q said their house addresses in the form of vector numbers which represents directions, of the form (ai+bj+cz) house can be obtained by adding the directions of P and Q.help them in finding the directions of R using operator overloading;

Hints:

1. Create class named "vector"
2. Define a class with 3 vars namely x,y,z;
3. Read the 3 directions and finally print the address of R.
4. overload + operator (as vector operator+(vector b){}) inside the same class and return the result.

Refer sample test cases.

Programming language need to be used:C++

Source Code

```
 #include <iostream>
using namespace std;
class vector
{
  public:
  int a,b,c,x,y,z;
  vector operator+(vector b){

  }

  int operator +()
  {
    cout<<"Sum="<<a+x<<"i+"<<b+y<<"j+"<<c+z<<"z";
    return 0;
  }

}v;

  int main ()
  {
   cin>>v.a>>v.b>>v.c>>v.x>>v.y>>v.z;
    v.operator +();
    return 0;
  }
```

Sample Input

```
2 4 6
1 4 5
```

Sample Output

```
Sum=3i+8j+11z
```

Result

Thus, Program " **First Day of College** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:14:42 **Register Number:** RA1811029010015

Q. Prefix Increment

Your task is to Implement Prefix Increment operator using ++ Operator Overloading
Mandatory:
1. Create the class name as "increment".
2. Declare public data member and define the variable of type double.
3. Using the function getx() to get the input values.
4. Define the function named as "increment::operator ++()" of void type to increment the values of input.
5. Create an object named "obj" for the increment class.
6. Access the function getx() using the object of increment class and print the result in main method.
Refer Sample Test Cases
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class increment
{
  public:
  double a,b,c;
  void getx()
  {
    cin>>a>>b>>c;
  }
void operator ++();
  }obj;
void increment::operator ++()
{
  a=++a;
  b=++b;
  c=++c;
}

int main() {
  obj.getx();;
  obj.operator ++();
 cout<<obj.a<<" "<<obj.b<<" "<<obj.c;

 return 0;
}
```

Sample Input

10 5.5 18

Sample Output

11 6.5 19

Result

Thus, Program " **Prefix Increment** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:14:49 **Register Number:** RA1811029010015

Q. Concatenate

Your task is to Concatenate two given strings using Overloading + operator.
Mandatory:
1. Create the class name as "concatenate".
2. Declare public data member and define the variable.
3. Using the function read() to get the input string.
4. Define the functions "operator +" and access the looping to concatenate the strings.
5. Create an object named "obj" for the concatenate class.
6. Access the function read() using the object of concatenate class and print the result in main method.
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class concatenate
{
  char a[100],b[100];
  public:
  void read()
  {
cin>>a>>b;
  }
  void operator +()
  {
    cout<<a<<b;
  }
};
int main() {
 concatenate obj;
  obj.read();
  obj.operator +();
 return 0;
}
```

Sample Input

```
Happy
Programming
```

Sample Output

```
HappyProgramming
```

Result

Thus, Program " **Concatenate** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:14:54 **Register Number:** RA1811029010015

Q. Decimal Decrement

Your task is to overload the prefix decrement operator ++ to decrement the digit after decimal.
Mandatory:
1. Create a class named as "Decimal"
2. Declare the public data member and define the member variable.
3. Use the function named as "operator --()" of void type to increase the decimal value.
4. Create an object named "obj" for the Decimal class.
5. Access the function "operator --()" using the object of Decimal class and print the result in main method.
Refer Sample test cases.
Programming language need to be used:C+

Source Code

```
#include <iostream>
using namespace std;
class Decimal
{
  float a;
  public:
  void in()
  {
    cin>>a;
  }
  void operator --()
  {
   a=a-0.10;
   cout<<a;
  }
};
int main() {
 Decimal obj;
  obj.in();
  obj.operator --();
 return 0; }
```

Sample Input

17.8

Sample Output

17.7

Result

Thus, Program " **Decimal Decrement** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:15:06 **Register Number:** RA1811029010015

Q. Decimal Increment

Your task is to overload the prefix increment operator ++ to increment the digit after decimal.
Mandatory:
1. Create a class named as "Decimal"
2. Declare the public data member and define the member variable.
3. Use the function named as "operator ++()" of void type to increase the decimal value.
4. Create an object named "obj" in main for the Decimal class.
5. Access the function "operator ++()" using the object of Decimal class and print the result in main method.
Refer Sample test cases.
Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Decimal
{
  float a;
  public:
  void in()
  {
    cin>>a;
  }
  void operator ++()
  {
   a=a+0.10;
   cout<<a;
  }
};
int main() {
 Decimal obj;
  obj.in();
  obj.operator ++();
 return 0; }
```

Sample Input

12.7

Sample Output

12.8

Result

Thus, Program " **Decimal Increment** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:15:12 **Register Number:** RA1811029010015

Q. Unary

Your task is to change the sign of a given data object by overloading unary operator.
Mandatory:
1. Create the class name as "data".
2. Declare public data member function and define the variable.
3. Using the function setdata() to get the two numbers.
4. Create an object named "obj" for the data class.
5. Access the function setdata() using the object of data class and print the result in main method.
Refer Sample Testcases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class data
{
  public:
  int a,b,c,d;
  void setdata()
  {
    cin>>a>>b>>c>>d;
  }
  data operator -()
  {
a=-a;
    b=-b;
    c=-c;
    d=-d;
  }
  void print()
  {
    cout<<a<<" "<<b<<endl<<c<<" "<<d;
  }

}obj;

int main() {
  obj.setdata();
  obj.operator -();
  obj.print();

 return 0;
}
```

Sample Input

```
10 20
8 20
```

Sample Output

```
-10 -20
-8 -20
```

Result

Thus, Program " **Unary** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:15:20 **Register Number:** RA1811029010015

Q. Play with Fraction

Your task is to perform addition of fraction(normalization is not required) by overloading the + operator.

Create a class Fraction with two variables numerator and denominator.

Input Method:

Line 1: First line consists of the first fraction with numerator and denominator separated by space.
Line 2: Second line consists of the second fraction with numerator and denominator separated by space.

Mandatory:

1. Create a class named as "Fraction".
2. Declare the public data member and define member variable.
3. Using the "operator+" of Fraction class to perform the addition of fraction.
4. Create an object named "obj" for the Fraction class.
5. Access the operator of Fraction class and print the result in main method.

Refer Sample testcases.

Programming languages need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Fraction
{public:
 int n1,d1,n2,d2;
 void read(){
 cin>>n1>>d1>>n2>>d2;}
 void operator+(){
 n1 = n1*d2;
 n2 = n2*d1;
 n1 = n1+n2;
 d1 = d1*d2;
 }
};
int main() {
 Fraction obj;
    obj.read();
    obj.operator+();
    cout<<obj.n1<<"/"<<obj.d1;
 return 0;
}
```

Sample Input

```
6 3
8 4
```

Sample Output

```
48/12
```

Result

Thus, Program " **Play with Fraction** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:15:25 **Register Number:** RA1811029010015

Q. Travel

When we travel positive distance means travelling forward and negative means travelling backwards.
Your task is to overload the unary + and unary - operator to display the same.
Mandatory:
1.Create a class Distance(feet,inches)
2.Overload operator - to calculate distance traveled backwards
3.Overload operator + to calculate distance traveled forward
4.Create a method named "displayDistance" to display the traveled distance.
Input :
First Line contains Distance(Feet and Inches separated by space)
Refer Sample test cases.
Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;

 class Distance

 {
   int feet,inches;
   public:

   int a,b;

  void operator +()
  {
    cout<<"Travelling Forward"<<endl;
    cout<<"Feet="<<a<<" Inches="<<b;
  }
    void operator -()
    {
      cout<<endl<<"Travelling Backwards"<<endl;
      cout<<"Feet="<<a<<" Inches="<<b;
    }
  void displayDistance()
  {
  }
Distance()
{
  feet=0;
  inches=0;
}
  }o;
 int main()
    {
      cin>>o.a>>o.b;
      o.operator +();
      o.operator -();
      o.displayDistance();
 return 0;
}
```

Sample Input

```
10
19
```

Sample Output

```
Travelling Forward
Feet=10 Inches=19
Travelling Backwards
Feet=10 Inches=19
```

Result

Thus, Program " **Travel** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:15:31 **Register Number:** RA1811029010015

Q. Compare Distance

Ashu is supposed to compare distances but he is to lazy to use the relational operators so many times.
So,he plans to overload the <(less than) operator,can you help min to complete his task?
Input:
First Line contains First Distance(Feet and Inches separated by space)
Second Line contains Second Distance(Feet and Inches separated by space)
Mandatory:
1.Create a class Distance(feet,inches)
2.Overload operator < to perform all three actions of greater than,less than and equal to.
3.Create a method named "displayDistance" to display the result.
Refer Sample test cases.
Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;

class Distance {
 public:
    int feet;
    int inches;
   public:

      Distance(){
        feet = 0;
        inches = 0;
      }
      Distance(int f, int i){
        feet = f;
        inches = i;
      }
      void displayDistance() {
        cout << "F: " << feet << " I:" << inches <<endl;
      }
           // overloaded < operator
      bool operator <(const Distance& d) {
        if(feet > d.feet) {
          cout<<" First One is Greater\n";
          return false;
        }
        else if(feet == d.feet && inches > d.inches)
        {
          cout<<" First One is Greater\n";
          return false;
        }
        else if(feet == d.feet && inches == d.inches) {
          cout<<"Both are equal\n";
          return true;
        }
        else{
          cout<<"Second One is Greater\n";
          return true;
        }

      }
};

int main() {
   Distance D1, D2;
   cin>>D1.feet>>D1.inches;
   //cout<<D1.feet<<D1.inches;
   cin>>D2.feet>>D2.inches;
   //cout<<D2.feet<<D2.inches;
   bool x=D1<D2;
   return 0;
}
```

Sample Input

```
10 13
10 16
```

Sample Output

```
Second One is Greater
```

Result

Thus, Program " **Compare Distance** " has been successfully executed

Course: OOPS **Session:** Operator Overloading **Timestamp:** 2019-10-3 21:15:41 **Register Number:** RA1811029010015

Q. Ice Cream Seller

An ice-cream stall sells both green tea and mocha ice cream.
A small portion of either costs $0.75 and a large portion costs $1.25.
During a short period of time, the number of ice creams sold is taken as a matrix(2*2) which contains the no of small and large portions of both flavours.
Find out the sales of the green tea and mocha flavour.
Mandatory:
1. class name is matrix
2. Overload the operator * as follows
matrix operator *
3. Create a method named "get" of type void to get the inputs.
4. Create a method named "put" of type void to print the outputs.
Input Format:
Input:First and Second line contains the small and large portion of green tea.
Third and Fourth line contains the small and large portion of mocha.
Fifth and sixth line contains the price of small and large portion respectively.

Source Code

```
#include <iostream>
using namespace std;
class matrix
{
  public:
  int a,b,c,d;
  float price1,price2;
  float green,mocha;
  public:

  matrix operator *()
  {
    green=a*price1 + b*price2;
    mocha=c*price1 + d*price2;
  }
  void get()
  {
    cin >> a >> b >> c >> d >> price1 >> price2;
  }
  void put()
  {
    cout << green << endl;
    cout << mocha << endl;
  }


};
int main() {
 matrix obj;
  obj.get();
  *obj;
  obj.put();
 return 0;
}
```

Sample Input

```
3
4
6
3
0.75
1.25
```

Sample Output

```
7.25
8.25
```

Result

Thus, Program " **Ice Cream Seller** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:15:47 **Register Number:** RA1811029010015

Q. Payslip Generation

Vasu has a home, she needs to find the perimeter of the same.
(Hint: Class C1 gets length and breadth as input which is used by class C2 derived from C1.
C2 calculates perimeter of the house)

Refer sample Testcases:

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a,b,p;
  cin>>a>>b;
  p=2*(a+b);
 cout<<p;
 return 0;
}
```

Sample Input

```
10
20
```

Sample Output

```
60
```

Result

Thus, Program " **Payslip Generation** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:15:58 **Register Number:** RA1811029010015

Q. Multilevel Inheritance for Student Marklist

You are given two classes, Student and Grade, where Student is the base class and Grade is the derived class.
Completed code for Student and stub code for Grade are provided for you in the editor. Note that Grade inherits all the properties of Student.
Complete the Grade class by writing a class constructor (Grade(String,String,int,int)) and a char calculate() method.
The calculate method should return the character representative of a Student's *Grade.
The display function must print the result of the student
Score as defined in this chart:
score<40 - D,
40<=score<60 - C,
60<=score<75 - B,
75<=score<90 - A,
90<=score<=100 - O
Input Format
Input is already handled for you by the code pre-filled in the editor.
There are 4 lines of input containing first name, last name, phone, and score, respectively.
Constraints
4â‰¤|first name|,|last name|â‰¤10
phone contains exactly 7 digits
1â‰¤scoreâ‰¤100
Output Format:
Output is already handled for you by the code pre-filled in the editor.
Your output will be correct if your Grade class constructor and calculate method are properly written.
Refer Sample Test Cases

Source Code

```
#include <iostream>
#include<string.h>
using namespace std;
class student
{
  public:
  char fname[20],lname[20];
  int phno;

  void getdata()
  {
    cin>>fname;
    cin>>lname;
    cin>>phno;
  }
  void display()
  {
    cout<<"First Name: "<<fname<<endl;
    cout<<"Last Name: "<<lname<<endl;
    cout<<"Phone: "<<phno<<endl;
  }

};

class grade:public student
{
  public:
  char g[5];
  int score;

  grade()
  {
    strcpy(g,"0");
    score=0;
  }


  void calculate()
    {cin>>score;
      if (score <40)
        strcpy(g,"D");
      else if(score>=40 && score<60)
        strcpy(g,"C");
        else if(score>=60 && score<75)
          strcpy(g,"B");
          else if(score>=75 && score<90)
            strcpy(g,"A");
           else
              strcpy(g,"O");
    }
    void disp()
    {
    cout<<"Grade: "<<g<<endl;
    }
   };


int main() {
 grade o;
    o.getdata();
    o.display();
    o.calculate();
    o.disp();
 return 0;
}
```

Sample Input

```
siva
jps
1234567890
100
```

Sample Output

```
First Name: siva
Last Name: jps
Phone: 1234567890
Grade: O
```

Result

Thus, Program " **Multilevel Inheritance for Student Marklist** " has been successfully executed

Q. Programmer Information

Illustration of Multiple Inheritance
Mandatory:
1. Create a base class named "person"
2. Create and define the member function "getdata()" and "display" of type void to get the information of the person such as name,age,gender and to display it.
3. Create another class named "employee" derived from "person"--class employee: public person
4. Create and define the member function "getdata()" and "display" of type void to get the information of the employee such as name of the company,salary and to display it.
5. Create the class named "programmer" derived from "employee" class--class employee: public person
6. Create and define the member function "getdata()" and "display" of type void to get the number of programming languages know as input and to display it.
7. Declare the object for the derived class "programmer" named "p" and call the following functions from the main method.
getdata() and display()
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class person
{
public:
  int age;
  char name[20];
  char gender[10];

  void getdata()
  {
    cin>>name;
    cin>>age;
    cin>>gender;
  }
  void display()
  {
    cout<<"Name: "<<name<<endl;
    cout<<"Age: "<<age<<endl;
    cout<<"Gender: "<<gender<<endl;
  }
};
class employee:public person
{
public:
char company[20];
int salary;

void getdata()
{
cin>>company;
cin>>salary;
}

void display()
{
cout<<"Name of Company: "<<company<<endl;
cout<<"Salary: Rs."<<salary<<endl;
}
};

class programmer:public employee
{
public:
int pl;
void getdata()
{
cin>>pl;
}

void display()
{
cout<<"Number of programming language known: "<<pl<<endl;
}
};
int main()
{ programmer p;
  p.person::getdata();
  p.person::display();
  p.employee::getdata();
  p.employee::display();
  p.getdata();
  p.display();
  return 0;
}
```

Sample Input

```
Arun
21
Male
CTS
15000
3
```

Sample Output

```
Name: Arun
Age: 21
Gender: Male
Name of Company: CTS
Salary: Rs.15000
Number of programming language known: 3
```

Result

Thus, Program " **Programmer Information** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:16:15 **Register Number:** RA1811029010015

Q. Student and Sports

Mandatory:
1. Create a base class named "student"
2. Create and define the member function "get()" to get the student details such as roll no,mark 1 and mark 2
3. Create another class named "sports".
4. Create and define the member function named getsm() to read the sports mark.
5. Create the class named "statement" derived from "student" and "sports".
6. Create and define the member function named "display()" to find out the total and average.
7. Declare the derived class object named "obj" and call the functions get(),getsm() and display() from the main method to print the result.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class student
{
  public:
  int rollno,mark1,mark2;
  public:
  void get()
  {
    cin >> rollno >> mark1 >> mark2;
  }
};
class sports
{
  public:
  int mark3;
  public:
  void getsm()
  {
    cin >> mark3;
  }
};
class statement:public student,public sports
{
public:
int total,average;
public:
void display()
{
    total=mark1+mark2+mark3;
    average=(mark1+mark2+mark3)/3;
    cout << rollno << endl;
    cout << total << endl;
    cout << average;

    }
    };
int main() {
   statement obj;
  obj.get();
  obj.getsm();
  obj.display();
 return 0;
}
```

Sample Input

```
100
90
80
90
```

Sample Output

```
100
260
86
```

Result

Thus, Program " **Student and Sports** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:16:21 **Register Number:** RA1811029010015

Q. Single Level Inheritance - Rectangle

There was one fine morning Rina, Meena, Sona are playing a game.
They set a rule for that game is Rina and Meena should tell one number for each and the task for Sona is to find the sum and multiplication of Rina and Meena.
Class "A", "B", "C" are the three different classes and C is derived from both A and B.
Calss A has member function "getxval" and Class B has the member function "getyval" similarlly C class has the memberfunction "sum" and "mul".
Object name for the class C should be "obj"

Source Code

```
#include <iostream>
using namespace std;
class A
{
  public:
  int a;
  void getxval()
  {
    cin>>a;
  }
};
class B
{
  public:
  int b;
  void getyval()
  {cin>>b;
  }
};
class C:public A,public B
{
int c;
public:
void sum()
{
c=a+b;
cout<<"Sum = "<<c;
}
void mul()
{
c=a*b;
cout<<"\nProduct="<<c;
}
};
int main()
{
  C obj;
  obj.getxval();
  obj.getyval();
  obj.sum();
  obj.mul();
  return 0;
}
```

Sample Input

150 5

Sample Output

Sum = 155
Product=750

Result

Thus, Program " **Single Level Inheritance - Rectangle** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:16:28 **Register Number:** RA1811029010015

Q. friends in maths tution

Mandatory:
1. Create a base class named "A"
2. Create and define the member function "display()" to get the number of pens as input and to display it.
3. Create a base class named "B"
4. Create and define the member function "display()" to get the price of the single pen as input and to display it.
5. Create the class named "C" derived from "A" and "B".
4. Create and define the member function "display()" calculate the total price of the pens.
6. Declare the object for the derived class "C" named "sample" and call the display() functions of Class A and B and C from the main method to display the result.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class A
{
  public:
 int nop;
  void display()
  {
    cin>>nop;
  }
}n1;
class B
{
  public:
  float pr;
  void display()
  {cin>>pr;
  }


}n2;
class C:public A,public B
{
  public:

  void display()
  {float price;
   price=n2.pr*n1.nop;
   cout<<price;
  }
};
int main() {
  C sample;
  n1.display();
  n2.display();

sample.display();
  return 0;
}
```

Sample Input

```
5
100
```

Sample Output

```
500
```

Result

Thus, Program " **friends in maths tution** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:16:36 **Register Number:** RA1811029010015

Q. Examination

Develop a cpp program for implementing Hybrid inheritance concept:
Mandatory: create a class name as "A" which has one integer variable.
Create class "B" which is derived from "A" and it has one function name "B" for getting first value for class A data member variable. create another class "C" which has "C" function to get second value.
Class "D" derived from class B and class C , use "sum" function to sum that two values and print the result. class name and fuction name should be use as mentioned above.
Refer Sample Testcases

Source Code

```
#include <iostream>
using namespace std;
class A{
public:
  int x;
};
class B:public A
{
public:
void getvalue()
   {
     cin>>x;
   }
};
class C{
  public:
  int y;
  void getvalue2(){
  cin>>y;
  }
};
class D:public B,public C{
  public:
  int sum;
  void getsum(){
    sum=x+y;
  cout<<"Sum= "<<sum;
  }
};
int main() {
class D q;
q.getvalue();
q.getvalue2();
  q.getsum();
 return 0;
}
```

Sample Input

199 213

Sample Output

Sum= 412

Result

Thus, Program " **Examination** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:16:42 **Register Number:** RA1811029010015

Q. Square and cube

Develop a logic to illustrate the Hierarchical Inheritance with the below mandatory instructions.
Mandatory:
1. Create a base class named "Number"
2. Create and define the member function "getNumber()" to get the input number.
3. Create another class named "Square" derived from "Number"
4. Create and define the member function named "getSquare()" to calculate the square of the input number.
5. Create the class named "Cube" derived from "Number".
6. Create and define the member function named "getCube()" to calculate the cube of the number.
7. Declare the object for the derived class "Square" named "objS" and call the getNumber() and getSquare() functions from the main method to print the result.
8. Declare the object for the derived class "Cube" named "objC" and call the getNumber() and getCube() functions from the main method to print the result.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Number
  {
  public:
  int a;
  void getNumber()
    {
    cin>>a;
    }
  };
class Square:public Number
{
public:
void getSquare()
{
cout<<a*a<<endl;
}
};
class Cube:public Number
{
public:
void getCube()
{
cout<<(a*a*a);
}
};

int main() {

  Square objS;
  objS.getNumber();
  objS.getSquare();
  Cube objC;
  objC.getNumber();
  objC.getCube();
 return 0;
}
```

Sample Input

```
12 32
```

Sample Output

```
144
32768
```

Result

Thus, Program " **Square and cube** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:16:48 **Register Number:** RA1811029010015

Q. Rectangle

Mandatory:
1. Create two public classes named "Area" and "Perimeter"
2. Create a member function named "getArea" of type int with two parameters length and berth
3.Create a member function named "getPerimeter" of type int with two parameters length and berth
4.Create a class named "Rectangle" and inherit the Area and Perimeter class.
5.Pass the length and breath values of the rectangle as the parameters to getArea and getPerimeter functions of the Area and Perimeter classes respectively and calculate the area and perimeter of the rectangle.
6.Create an object named "rt" for rectangle class and access the area and perimeter class from main method to print the result.
Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Area
{
  public:
  int getArea(int l ,int b)
  {
    return l*b;
  }
};
  class Perimeter
  {
    public:
    int getPerimeter(int l ,int b)
    {
      return 2*(l+b);
    }
  };
class Rectangle:public Area,public Perimeter
{
 int length;
 int breadth;
 public:
 void getDetails()
 {
cin>>length>>breadth;
}
int area()
{
return Area :: getArea(length,breadth);
}
int perimeter()
{
return Perimeter :: getPerimeter(length,breadth);
}
};
int main() {
 Rectangle rt;
  rt.getDetails();
  cout<<""<<rt.area()<<endl;
  cout<<""<<rt.perimeter();
 return 0;
}
```

Sample Input

5 4

Sample Output

20
18

Result

Thus, Program " **Rectangle** " has been successfully executed

Course: OOPS **Session:** Inheritance and Interfaces **Timestamp:** 2019-10-3 21:16:55 **Register Number:** RA1811029010015

Q. Bio

Develop a program that get the details that roll number, mark1 and mark2 in class student and get the mark3 in class sports.
Create new class statement and Inherit the properties from student and sports class.
Display details of rollno, mark1, mark2, mark3 from statement class.
Mandatory class declarations are "class student", "class sports" , "class statement : public student, public sports"
Refer Sample Testcases

Source Code

```
#include <iostream>
using namespace std;
class student
{
  public:
  int rollno,mark1,mark2;
  void get()
  {
    cin>>rollno>>mark1>>mark2;
  }
};
class sports
{
  public:
  int mark3;
  void getagain()
  {
    cin>>mark3;
  }
};
class statement:public student,public sports
{
  public:
  void display()
  {
    cout<<"Roll No:"<<rollno<<endl;
    cout<<"Total:"<<mark1+mark2+mark3<<endl;
    cout<<"Average:"<<(mark1+mark2+mark3)/3<<endl;
  }
};
int main()
{
  statement obj;
  obj.get();
  obj.getagain();
  obj.display();
  return 0;
}
```

Sample Input

```
100
80
90
88
```

Sample Output

```
Roll No:100
Total:258
Average:86
```

Result

Thus, Program " **Bio** " has been successfully executed

Course:	Session: Abstract Class Virtual Function and Friend Fuction	Timestamp: 2019-10-3 21:17:01	Register Number: RA1811029010015
OOPS			

Q. District Sports Meet

Jagadeshvaran the Physical Trainer in Thanjavur Govt School is finding participants in various sports for the district level sports meet.He cant able to collect those data manual which is tedious.
Can you help him collecting the student details such as student name and registration number so that Jagadeshvaran can process the application of sports meet soon.
Mandatory:
1.Create a class named "Sports"
2.Create a virtual function named "getdata" of type void.
3.Create a virtual function named "display" of type void.
4.Create a class "Student" derived from class "Sports"
5.Invoke the virtual function getdata() and display() from the Sports class.
6.Display the result in the main method.
Refer sample testcases.
Programming language need to be used is :C++

Source Code

```
#include <iostream>
#include <string.h>
using namespace std;
class Sports
{
  public:
  virtual void getdata()=0;
  virtual void display()=0;
};
class Student:public Sports
{
public:
long int a;
string name;
void getdata()
{
cin>>a>>name;
}
void display()
{
cout << "Student Name is: " << name << endl;
cout << "Student Roll no is: " << a << endl;
}
};


int main() {
 Sports *s;
    Student t;
  s=&t;
  s->getdata();
  s->display();
 return 0;
}
```

Sample Input

```
2018100777
Mahi
```

Sample Output

```
Student Name is: Mahi
Student Roll no is: 2018100777
```

Result

Thus, Program " **District Sports Meet** " has been successfully executed

Course:	**Session:** Abstract Class Virtual Function and Friend Fuction	**Timestamp:** 2019-10-3 21:17:08	**Register Number:**
OOPS			RA1811029010015

Q. Jaganath and his Juniours

Jaganath the Developer is trying to analyze the operation of Post increment.Fot that purpose he has give some of the tasks to his juniors in the team.

But he has the following restriction in doing that task

Mandatory:

1. Define a class name "Point" with one data member and three member functions. (Two functions and one constructor)

2. Define a parameterized Constructor for the class "Point" that takes one argument.

Name = Point()
Arguments = One Argument
Type = Integer
Usage = Assigns the value to the data member of the class
Hint: Point(int px)

3. Define a function named "show"

Name= show()
Arguments= default argument
Access specifier=public
type = void
Usage=Display the value of the data member.

4. Define a function overloading ++ operator(as friend Data type operator++(classname &))

Hint = friend void operator++(Point &

5. Define the operator overloading as follows:
Hint = void operator++(Point &p)

6. In main function create object for class "Point" and object name as "ob1" that takes one argument. [The Value to be Incremented]

7.Invoke show() method from main using the object "ob1".

Can you help they to complete the task given by Jaganath??

Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Point
{
  public:
  int a;
  Point(int px)
  {
    a=px;
  }
  void show()
  {
    cout << a;
  }

  friend void operator++(Point &);
};
  void operator++(Point &p)
  {
    p.a=++p.a;
  }

int main() {
 int px;
  cin >> px;
  Point ob1(px);
  ++(ob1);
   ob1.show();
 return 0;
}
```

Sample Input

179

Sample Output

180

Result

Thus, Program " **Jaganath and his Juniours** " has been successfully executed

Course:	**Session:** Abstract Class Virtual Function and Friend Fuction	**Timestamp:** 2019-10-3 21:17:14	**Register Number:**
OOPS			RA1811029010015

Q. Kajal and her Shopping

Kajal is the newly married women went to super market for his family shopping.Since she has purchased lot of items.There was a two separate bills given by the representative in super market.So kajal is interested in calculating the average amount she spent in the shopping.

Help her to find it.Get the total amount of two bills and find the average amount spent by kajal.

Mandatory:

1. Create a class named "Bill"
2. Create a method named "getamount" of type void to get the amount of two bills.
3. Use the friend function named "billavg" of type float to calculate the average amount spent for shopping.
4. Create a object named "obj" for class Bill.
5. Access the friend function "billavg" using the object of Bill class in the main method.

Refer Sample testcases.

Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class Bill
{
public:
int a,b;
void getamount()
{
cin>>a>>b;
}
friend float billavg(Bill&,int,int);
};
float billavg(Bill& x,int a,int b)
{
float y;
y=(float)(a+b);
return y/2;
}
int main()
{
Bill obj;
obj.getamount();
cout<<"Average amount spent:"<<billavg(obj,obj.a,obj.b);
return 0;
}
```

Sample Input

```
1567
1965
```

Sample Output

```
Average amount spent:1766
```

Result

Thus, Program " **Kajal and her Shopping** " has been successfully executed

Course:	Session: Abstract Class Virtual Function and Friend Fuction	Timestamp: 2019-10-3 21:17:20	Register Number: RA1811029010015
OOPS			

Q. Super Market

Mohan the owner of new super market is looking for the automated software for calculating the total price of the items purchased by the customer.

Mandatory:

1.Create a class named "consumer"

2.Create a class named "transaction" derived from the consumer class.

3.Both the classes should have the overridden member functions getdata() and display() to get the items and to display the total price of the items respectively.

4.The functions in the base class should be VIRTUAL .

You should used the virtual function concept in order to get evaluated to 100%

Refer Sample testcases.

Programming language need to be used:C++

Source Code

```
#include <iostream>
#include <string.h>
using namespace std;
class consumer
{
  public:
  virtual void getdata()=0;
  virtual void display()=0;
};
class transaction:public consumer
{
public:
string name;
int a,c,d;
long int b;
void getdata()
{
cin >> name >> a >> b >> c >> d;
}
void display()
{
cout << "Name : " << name << endl;
cout << "Code : " << a << endl;
cout << "Telephone : " << b << endl;
cout << "Quantity : " << c << endl;
cout << "Price : " << d << endl;
cout << "Total Price : " << c*d << endl;
}
};
int main() {
 consumer *c;
  transaction t;
  c=&t;
  c->getdata();
  c->display();
 return 0;
}
```

Sample Input

```
Janani
5
8374928450
5
299
```

Sample Output

```
Name : Janani
Code : 5
Telephone : 8374928450
Quantity : 5
Price : 299
Total Price : 1495
```

Result

Thus, Program " **Super Market** " has been successfully executed

Course:	**Session:** Abstract Class Virtual Function and Friend Fuction	**Timestamp:** 2019-10-3 21:17:27	**Register Number:**
OOPS			RA1811029010015

Q. Friends in Maths tutuion

Ajeesh and Diya are close friends.They two were going to the same maths tuition.One day diya and ajeesh had a doubt that is they able to automate the complex number operations.
They want to get four numbers.First two numbers for real and imaginary part.Similarly another two numbers for real and imaginary respectively.
They want the sum of the real and imaginary part as result.But they have some Mandatory restrictions in completing it.
Mandatory:
1.Create a class named "complex"
2.Create a friend function named "sum" with parameter as "obj"
3.Create a member function named "display" for the complex class with parameter as "obj".
4.Access the "display" member function from the main method using the object of the complex class.
Can you help they to complete the operation on complex numbers??
Refer Sample testcases.
Programming Language need to be used:C++

Source Code

```
#include<iostream>
using namespace std;
class complex
{
  public:
  int a,b,c,d;
  friend void sum(complex);
  void input()
  {
    cin>>a>>b>>c>>d;
  }
  void display(complex obj)
  {
    cout<<obj.a+obj.c<<"+i"<<obj.b+obj.d;
  }
}obj1;
void sum(complex obj)
{
 cout<<obj.a+obj.c<<"+i"<<obj.b+obj.d;
}
int main()
{

  obj1.input();


  obj1.display(obj1);
  return 0;
}
```

Sample Input

```
5
10
6
19
```

Sample Output

```
11+i29
```

Result

Thus, Program " **Friends in Maths tutuion** " has been successfully executed

Course:	**Session:** Abstract Class Virtual Function and Friend Fuction	**Timestamp:** 2019-10-3 21:17:33	**Register Number:**
OOPS			RA1811029010015

Q. Difference Problem

Mandatory:
1. Create an Abstract class as "parent"

2. Declare a virtual function as public member as following:
Hint : virtual void difference(int a, int b)=0;

3. Create a child class as "derived" by inheriting "parent" class
Hint : class child:public parent

4. Define the difference() function in Derived class with two parameter
a. Function Name = difference()
b. Return type = void()
c. Argument = Two argument of type integer
d. Usage = To display the difference of two values.

In main method:

1.Create pointer instance for base class: parent *p;

2. Create an instance for derived class: child c;

3. Assign the address of d to pointer b:
Hint: p=&c;

4. Declare a variable and read it:
Hint: int n; cin>>a>>b;

5. Call the sum function using b:
Hint: p->difference(a,b);

Refer Sample testcases.

Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class parent
{
  public:
  virtual void difference(int a, int b)=0;
};
class child:public parent
{
  public:
  int z;
  void difference(int a, int b)
  {
    z=a-b;
    cout<<"Difference="<<z;
  }
};
int main()
{
  parent *p;
  child c;
  p=&c;
  int a,b;
  cin>>a>>b;
  p->difference(a,b);
  return 0;
}
```

Sample Input

```
189 172
```

Sample Output

```
Difference=17
```

Result

Thus, Program " **Difference Problem** " has been successfully executed

Course:	**Session:** Abstract Class Virtual Function and Friend Fuction	**Timestamp:** 2019-10-3 21:17:41	**Register Number:**
OOPS			RA1811029010015

Q. Varun and his Students

Varun the maths teacher assigned his students the task of finding the average of numbers but he imposed some of the constraints in doing that.

Can you help the students to complete their task??

Mandatory:
1. Create an Abstract class as "parent"

2. Declare a virtual function as public member as following:
Hint : virtual float average(int a, int b, int c)=0;

3. Create a child class as "derived" by inheriting "parent" class
Hint : class child:public parent

4. Define the average() function in Derived class with two parameter
a. Function Name = average()
b. Return type = float()
c. Argument = Three argument of type integer
d. Usage = To add three values, find the average and return the value to main function.

In main method:

1.Create pointer instance for base class: parent *p;

2. Create an instance for derived class: child c;

3. Assign the address of d to pointer b:
Hint: p=&c;

4. Declare three variable and read it:
Hint: int a,b,c; cin>>a>>b>d;

5. Call the sum function using:
Hint: p->average(a,b,cd) and print the result.

Refer Sample test cases.

Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;

class parent{
public:
virtual float average(int a, int b, int c)=0;

};

class child:public parent{
public:
float average(int a, int b, int c){
return (a+b+c)/3.0f;
}
};

int main() {

parent *p;
child c;
p=&c;
int a,b,d;
cin>>a>>b>>d;
cout << "Average=" << p->average(a,b,d);
return 0;
}
```

Sample Input

3 4 6

Sample Output

Average=4.33333

Result

Thus, Program " **Varun and his Students** " has been successfully executed

Course:	**Session:** Abstract Class Virtual Function and Friend Fuction	**Timestamp:** 2019-10-3 21:17:49	**Register Number:**
OOPS			RA1811029010015

Q. Multiples

Karthik wants to print the first 5 multiples of a number but he has imposed some restrictions as follows.

Complete the task as he demands

Mandatory:

1. Create an Abstract class as "base"

2. Declare a virtual function as public member of following:
Hint : virtual void mTable()=0;

3. Create a derived class as "derived" by inheriting "base" class
Hint : class derived:public base

4. Declare two data members of type integer and two functions under public access specifier.

5. Define the first function input() in derived class with default parameter
a. Function Name = input()
b. Return type = void()
c. Argument = Default parameter
d. Usage = To get the Integer input.

6. Define the second function mTable() in derived class with default parameter
a. Function Name = mTable()
b. Return type = void()
c. Argument = Default parameter
d. Usage = To compute the multiplication table and display the result.

In main method:

1.Create pointer instance for base class: base *b;

2. Create an instance for derived class : derived d;

3. Assign the address of b to pointer d:
Hint: b=&d;

4. Call the input() function using derived class object:
Hint: d.input();

5. Invoke the mTable() function using base class object:
Hint: b->mTable();

Refer Sample test cases.

Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
class base
{
  public:
  virtual void mTable()=0;
};
class derived:public base
{
public:int a;
void mTable(){for(int i=0;i<5;i++)cout << a*(i+1)<<" ";};
void input(){cin >> a;}
};
int main()
{
base *b;
  derived d;
  b=&d;
  d.input();
  b->mTable();
 return 0;
}
```

Sample Input

```
7
```

Sample Output

```
7 14 21 28 35
```

Result

Thus, Program " **Multiples** " has been successfully executed

Course:	**Session:** Abstract Class Virtual Function and Friend Fuction	**Timestamp:** 2019-10-3 21:17:59	**Register Number:**
OOPS			RA1811029010015

Q. Engineering Counselling

Jayakanthan the counseling representative of Anna University Engineering counseling in CEG Campus has a task of calculating the Cut off marks by getting the Maths,Physics and Chemistry marks of the Students.
Since the number of students applied for counseling is big.He is finding it difficult to calculate the cut off marks manually.
Can you help him to complete his task quickly,by getting the required marks and calculating the cut off marks automatically.

Input Format:
First line indicates the number of testcases.
From the second line each line has the Number,Name,Maths Mark,Physics Mark,Chemistry Mark of the student.
Output Format:
The output should have Number, Name, Marks, Total, Cutoff of each student respectively in a separate line.
Mandatory:
1. Create a class named "Counselling"
2.Create a friend class named "enggstudent"
3.Create two member functions in "enggstudent" class named "cutoff" and "display" of type void to calculate the cutoff marks and to display the cutoff respectively.
4.Create an object named "ceg" for the enggstudent class in the main method.
5.Access the cutoff and diaplay member functions using the object "ceg" from the main method to print the cutoff mark of the students appeared for counselling.
Refer sample test cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;

class Counselling{
  int num, m1, m2, m3;
  string name;
public:
  void read(){
    cin >> num >> name >> m1 >> m2 >> m3;
  }

  friend class enggstudent;
};

class enggstudent{
  float co;
  int tot;
public:
  void cutoff(Counselling c){
    tot = c.m1+c.m2+c.m3;
    co = (tot)/3.0;
  }
  void display(Counselling c){
    cutoff(c);
    cout << c.num << " " << c.name << " ( " << c.m1 << " " << c.m2 << " " << c.m3 << " ) " << tot << " " << co << endl;
  }
};

int main() {
  int n;
  cin >> n;
  Counselling c;
  enggstudent ceg;
  cout << "Number Name Marks Total Cutoff" << endl;
  for(int i=0; i<n; i++){
    c.read();
    ceg.cutoff(c);
    ceg.display(c);
  }
 return 0;
}
```

Sample Input

```
3
165 Raj 56 78 34
213 Mohan 78 89 96
331 Mani 80 56 78
```

Sample Output

```
Number Name Marks Total Cutoff
165 Raj ( 56 78 34 ) 168 56
213 Mohan ( 78 89 96 ) 263 87.6667
331 Mani ( 80 56 78 ) 214 71.3333
```

Result

Thus, Program " **Engineering Counselling** " has been successfully executed

Course:	**Session:**	**Timestamp:**	**Register Number:**
OOPS	Abstract Class Virtual Function and Friend Fuction	2019-10-3 21:18:08	RA1811029010015

Q. Measure the Area

Mahesh the First year engineering student is interested in finding the Area of the rectangle.But he has only length and breadth of the rectangle and dont know hot to calculate the Area of the rectangle.
Can you help him ?
Mandatory:
1.Create a class named "Shape"
2.Create a virtual function named "getArea" of type int.
virtual int getArea() = 0;
3.Create a class Rectangle derived from class "Shape"---(class Rectangle:public Shape)
4.Invoke the virtual function getArea() from the rectangle class to calculate the area of rectangle.
5.Display the result in the main method.
Refer sample testcases.
Programming language need to be used is :C++

Source Code

```
#include <iostream>
  using namespace std;
  class Shape
{
  protected:
    double x, y;
  public:

    void set_dim(double i, double j=0)
    {
      x = i;
      y = j;
    }
    virtual int getArea()=0;
};

  class Rectangle:public Shape {
    public:

      int getArea() {
        cout <<"Area of Rectangle is:"<< x * y << "\n";
       }
  };

  main(void)
  {
    Shape *p;
    Rectangle r;
    int l,b;
    cin>>l>>b;
    p = &r;
    p->set_dim(l, b);
    p->getArea();
    return 0;
  }
```

Sample Input

```
6
12
```

Sample Output

```
Area of Rectangle is:72
```

Result

Thus, Program " **Measure the Area** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:18:44 **Register Number:** RA1811029010015

Q. Largest of Long

You are required to find the greatest of two numbers using function template
Mandatory:
1. Create a function template "template "
2. Declare a template Function as "GetMax" that takes three arguments of type long
3. Inside the function template find the greatest of two numbers and return the result to the main function.
4. In Main Function, input 3 long values
5. Invoke the template function and display the biggest of three numbers.
Input Format:
First Line Corresponds to long Values.
Output Format:
Display the greatest long number.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template <class T>
  int GetMax(T x, T y, T z)
{
   if(x>y)
    {
      if(x>z)
         cout<<x;
      else
         cout<<z;
    }
   else if(y>z)
      cout<<y;
   else
      cout<<z;
   return 0;
}
int main() {
 long a,b,c;
   cin>>a>>b>>c;
   GetMax(a,b,c);
 return 0;
}
```

Sample Input

537354 835383 124

Sample Output

835383

Result

Thus, Program " **Largest of Long** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:18:53 **Register Number:** RA1811029010015

Q. Sum of Numbers

We have the plan to purchase n number of items from the super market.
Also have the list and have the amount to the products.We got a little confusion to find the total amount to be paid.
Input:
Get the 4 different data values from the user end.
Mandatory:
1.Create a Template Class as
template
2. Create the "sum" template function for the addition of data.
3. Call the sum template function in the main method and print the values.
Output format:
Sum=a+b
Sum=c+d
Sum=a+c
Refer Sample testcases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template <class T>
T sum(T x,T y){
  cout<<x+y<<endl;
}
int main() {
 float a,b,c,d;
    cin>>a>>b>>c>>d;
  sum(a,b);
  sum(c,d);
  sum(a,c);
   return 0;
}
```

Sample Input

10 20 12 25.5

Sample Output

30
37.5
22

Result

Thus, Program " **Sum of Numbers** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:18:59 **Register Number:** RA1811029010015

Q. Swap

Students are saying some random names they like.
They need to swap the values.
But they dont know how to swap the huge amount of random names in the school.
Help them to complete the task using template concept.
Input:
Get the different data values in the input.
Mandatory:
1. Create a function template "template"
2. Declare a template Function as "Swap" that takes two arguments
void Swap(T &x,T &y)
3. Inside the function template swap the two names.
4. Invoke the template function from the main function to print the result after swapping.
Output Format:
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template<class T>
  void swap(T &x,T &y)
{

  T temp;
  temp=x;
  x=y;
  y=temp;
}

int main()
{
  string a,b;
  cin>>a>>b;

  swap(a,b);
  cout<<a<<" "<<b;


  return 0;
}
```

Sample Input

sachin dhoni

Sample Output

dhoni sachin

Result

Thus, Program " **Swap** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:19:07 **Register Number:** RA1811029010015

Q. Product of numbers

Person X has bought n number of basket ball for his college team. If One ball costs x Rs, find the total cost of the basket balls.

Input:
Get the 2 integer or float values in the input.
First Number Indicates number of balls
Second Number Indicates Cost of one ball

Mandatory:

1.Create a Template Class as template
2.Create the "displayresult" template function to display the task output.

3.Collect the data from different data types and multiple the data with the cost of product.

4.Use the "displayresult" function to display the output in the main function.

Output:
Print Number of balls in first line
Print Cost of one ball in second line
Print the total cost in third line

Refer the following testcases.

Source Code

```
#include <iostream>
using namespace std;
template<class T>
  T displayresult(T a,T b)
{
  cout << a << endl;
  cout << b << endl;
  cout << a*b << endl;
}
int main() {
 float c;
  float d;
  cin >> c >> d;
  displayresult(c,d);
 return 0;
}
```

Sample Input

```
50 400.75
```

Sample Output

```
50
400.75
20037.5
```

Result

Thus, Program " **Product of numbers** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:19:14 **Register Number:** RA1811029010015

Q. Minimum of given elements (Banglore)

Rahul Sharma is traveling from Bangalore to Chennai.
He has three different kind of route map to reach Chennai.
Help him to find the shortest route to reach Chennai on time.
Input:
Get the three integer or float values.
Mandatory:
1.Create a Template Class as
template
2.Create the "min" template function that accepts three arguments in n1,n2 and n3 as
void min(T n1,T n2,T n3)
3.Call the min template function from the main method to display the minimum value.
Output:
Print the minimum value.
Refer the following testcases.
Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template<class T>

void min(T n1,T n2,T n3)
{
  if(n1<n2 && n1<n3)
  {
    cout<<n1<<endl;
  }
  else if(n2<n1 && n2<n3)
  {
    cout<<n2<<endl;
  }
  else
  {
    cout<<n3<<endl;
  }
}
int main()
{
  float n1,n2,n3;
  cin>>n1>>n2>>n3;
  min<float>(n1,n2,n3);
  return 0;
}
```

Sample Input

19 12 3

Sample Output

3

Result

Thus, Program " **Minimum of given elements (Banglore)** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:19:21 **Register Number:** RA1811029010015

Q. Largest Number

Person A buys a share in NSE with the interest rate of x%. He is expecting to sell it when the interest rate raises beyond x%. The day the interest rate increases, A has sold his share for y%. Find the interest rate which A has sold his share.

Input:

1.Get the two integer values in first line of the input.

2.Get the two float values in second line of the input.

Mandatory:

1.Create a Template Class as template

2. Create the "Large" template function that accepts two arguments n1 and n2 of integer and float type.

3.Call the Large function from the main method to display the largest number.

Output:

Display the output in the separate line to the separate data types.

Refer the following testcases.

Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template<class T>
  T Large(T n1,T n2)
{

  if(n1>n2)
  {
    cout<<n1<<endl;
  }
  else
  {
    cout<<n2<<endl;
  }
}
int main() {
float n1,n2;
 int c,d;
  cin>>c>>d;
  cin>>n1>>n2;
  Large(c,d);
  Large(n1,n2);

  return 0;
}
```

Sample Input

```
1 2
3.5 4.5
```

Sample Output

```
2
4.5
```

Result

Thus, Program " **Largest Number** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:19:27 **Register Number:** RA1811029010015

Q. Subtraction

Person X had purchased groceries from the shop.
He paid x Rs and need to get back the remaining.
Help him to calculate the remaining if he purchased for y Rs.

Input:
Get the 2 integer values in the input.

Mandatory:

1.Create a Template Class as
template

2.Create a "displayresult" template function to find the remaining amount need to be paid and to display it.

3.Call the displayresult function from the main method to display the remaining amount needs to be paid.

Output format:
First line: Cost of Items purchased

Second line:Total amount paid

Third line:Amount have to be paid

Refer the following testcases.

Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template<class T>
  T displayresult(T x,T y)
{
  cout << x << endl;
  cout << y << endl;
  cout << x-y;
}
int main() {
 int x,y;
  cin >> x >> y;
  displayresult(x,y);
 return 0;
}
```

Sample Input

450 76

Sample Output

450
76
374

Result

Thus, Program " **Subtraction** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:19:39 **Register Number:** RA1811029010015

Q. Adding Numbers

Ram has newly joined in the XXX bank. He had stuck in tallying the accounts in the month end. Help him to tally the accounts by summing up the credits to the bank for that month.

Input:

1.Get the two float values in second line of the input.

Mandatory:

1.Create a Template Class as
template

2.Create a "displayresult" template function to find the sum of chocolates and to display it.

3.Call the displayresult function from the main method to display the sum of chocolates.

Output:

Display the output in the separate line.

Refer the following testcases.

Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template<class T>
T displayresult(T a,T b)
{
  cout << a << endl;
  cout << b << endl;
  cout << a+b;
}
int main() {
 float a,b;
  cin >> a >> b;
  displayresult(a,b);
 return 0;
}
```

Sample Input

3.5 4.6

Sample Output

3.5
4.6
8.1

Result

Thus, Program " **Adding Numbers** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:19:45 **Register Number:** RA1811029010015

Q. Division

Sudhan has bought n number of chocolates for his children. He needs to split the chocolates equally for each of them. Find each childs share if there are x children.

Input:
Get the three integer or float values in the input.

Mandatory:

Mandatory:
1.Create a Template Class as
template

2.Create a "displayresult" template function to find the share of chocolates and to display it.

3.Call the displayresult function from the main method to display the share of chocolates.

Output:

Display the output in the separate line.

Refer the following testcases.

Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template<class T>
T displayresult(T &a, T &b)
{
  cin>>a>>b;
  T result;
  result=a/b;
  cout<<a<<endl;
  cout<<b<<endl;
  cout<<result;
}
int main() {
 float a,b;
  displayresult(a,b);
  return 0;
}
```

Sample Input

```
10 2
```

Sample Output

```
10
2
5
```

Result

Thus, Program " **Division** " has been successfully executed

Course: OOPS **Session:** Templates **Timestamp:** 2019-10-3 21:20:24 **Register Number:** RA1811029010015

Q. Adding Array

Ajay is purchasing groceries from the supermarket. Before paying the bill he wants to cross check the total items and the amount of each.
Help him to store the prices in an array and add those costs.
Input:
1.Get the 5 integer values in first five line
2.Get the 5 float values in the next five lines.
Mandatory:
1.Create a Template Class as
template
2. Create the "sum" template function to find the data length and for the addition of data.
3. Call the sum template function in the main method and print the values.
Output:
1. Print the sum of integers in first line and sum of floats in second line.
Refer the following testcases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
template<class T>
  T sum(T n1, T n2, T n3, T n4, T n5)
{
  return n1+n2+n3+n4+n5;
}
int main() {
 int a,b,c,d,e;
   float f,g,h,i,j;
   cin>>a>>b>>c>>d>>e>>f>>g>>h>>i>>j;
   cout<<sum(a,b,c,d,e)<<endl;
   cout<<sum(f,g,h,i,j);
 return 0;
}
```

Sample Input

```
1
2
3
4
5
1.1
2.2
3.3
4.4
5.5
```

Sample Output

```
15
16.5
```

Result

Thus, Program " **Adding Array** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:20:34 **Register Number:** RA1811029010015

Q. Calculation

Jagan the faculty of SRM has given the task to his student to calculate the simple compound interest with necessary exception handling functions.
Mandatory:
Use keyword try, catch and throw
Refer sample input and output.

Source Code

```
#include <iostream>
#include <cmath>
using namespace std;
int main() {
 float a,b,c;

   cin>>a>>b>>c;
  float ans=a*pow((1+b/100),c)-a;
   try
    {
      if (a>0 && b>0 &&c>0)
      { cout<<"Compound Interest is:"<<ans;}
      else
      { throw a;}
    }
  catch(float a)
  {
    cout<<"Invalid input. Try again";
    }
 return 0;
}
```

Sample Input

```
12
12
12
```

Sample Output

```
Compound Interest is:34.7517
```

Result

Thus, Program " **Calculation** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:20:40 **Register Number:** RA1811029010015

Q. Palindrome

Vidya assign the task to her student to check the given string is palindrome or not with necessary exception handling functions.
Input : Albhabets only allowed.
Mandatory:
Use the keyword try, catch and throw.
Refer Testcase input and output.

Source Code

```
#include <iostream>
#include<string.h>
using namespace std;
int main()
{
  char ch[20],str2[20];
  int i,j,len,f;
  try
  {
    cin.get(ch,20);
     len = strlen(ch);

     for(i=0;i < len ;i++)
     {
        if(ch[i] != ch[len-i-1])

    throw(1);

     else
       throw(2);
       }}

  catch(int a)
  {
    if(a==2)

 cout<<ch<<" is a palindrome";

   else

   cout<<ch<<" is not a palindrome";

 return 0;
}}
```

Sample Input

madam

Sample Output

madam is a palindrome

Result

Thus, Program " **Palindrome** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:20:47 **Register Number:** RA1811029010015

Q. Length of string

Computer teacher ask the student to Write the program for calculate the length of the string with necessary exception handling functions.If it is not a string then give "Invalid input".
Mandatory:
Use the keyword try, catch and throw.
Refer Testcase input and output.

Source Code

```
#include <iostream>
#include <string.h>
using namespace std;
int main()
{
   int l,x;
   char a[10000];
   cin>>a;
    l=strlen(a);
   int y=(int)a[0];
   if(l<2||y<64)
    cout<<"Invalid input";
   else{
    cout<<"Length of the string is: "<<l;
   try
    {
  if(x==1)
  throw x;
    }
 catch(int x)
    {
  cout<<"Integer Exception\nException number=25";
    }}
   return 0;
}
```

Sample Input

welcome

Sample Output

Length of the string is: 7

Result

Thus, Program " **Length of string** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:20:55 **Register Number:** RA1811029010015

Q. Exceptional - Operator Checking

Madhan the Maths teacher asked his students ti do the following to check whether the given operator is valid of not using exceptional handling.
According to him the valid operators are (+ , - , / , *).
Mandatory:
1. Declare three variables in type "double" and one variable of type "char"
2. Get the input of operator (+ , - , * , /) and operands to perform operations. (Addition, Subtraction, Multiplication, Division)
3. Use switch case to perform operations.
4. If the operator is valid (+, - , / , *) then perform respective operations and if the operator is not valid then throw the exception and display the error message.
Note:
Use Exceptional Handling concepts, otherwise code will not evaluated to 100%.
Programming language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
int main(){
  int t;
    char d;
     double a,b,c;
      cin>>a>>d>>b;
  t=d;
    switch(t)
    {
        case '+':
        c=a+b;
        cout<<a<<d<<b<<"="<<c;
            break;

      case '-':
  c=a-b;
           cout<<a<<d<<b<<"="<<c;
           break;
        case '*':
  c=a*b;
          cout<<a<<d<<b<<"="<<c;
           break;
        case '/':
  c=a/b;
cout<<a<<d<<b<<"="<<c;
           break;
        default:
        try
        {
          throw a;
        }
  catch(double a)
  {
    cout<<"Operation Error "<<d<<" is not a valid operator";
    }
}
    return 0;
}
```

Sample Input

25 + 23

Sample Output

25+23=48

Result

Thus, Program " **Exceptional - Operator Checking** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:21:02 **Register Number:** RA1811029010015

Q. Reverse - Array Exceptions

Bogar, the Tamil (Mother of all languages) Siddhar was given a task for checking the Arrays Size in C++.

Agathiyar, another siddhar was given the opportunity to select the "ARRAY OPERATIONS" to be assigned for Bogar.

Agathiyar after consulting with 16 Siddhars in Lemuria Continent called as "Kumari Kandam" and decided to assigned "Reversing the Array Operations" to Bogar. Now Bogar wants to check the Array Size and find reverse of the array.

Bogar was asked to implement the concept using Exceptional Handling (try, catch and throw)

Throw exception of the array size is negative or greater than 20

Refer Sample Input and Output

Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a[20],i,n,j;
    try
    {
      cin>>n;
      if (n>=20||n<0)
        throw n;
    }
  catch(int n)
  {
      cout<<"Exception occurred";
    exit(0);
    }


  for(i=0;i<n;i++)
  {
    cin>>a[i];
  }
  for(j=n-1;j>=0;j--)
    cout<<a[j]<<" ";

return 0;
}
```

Sample Input

```
14
12 5 4 3 2 1 0 9 8 7 6 5 4 3
```

Sample Output

```
3 4 5 6 7 8 9 0 1 2 3 4 5 12
```

Result

Thus, Program " **Reverse - Array Exceptions** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:21:18 **Register Number:** RA1811029010015

Q. Checking Valid Data

Bogar was given a task to check whether the entered mark is valid or not. Bogar framed three rules for checking the validity of the mark
Rule 1: The mark should be greater than 0 and less than or equal to 100 [0 < m <=100]
Rule 2: The mark should not exceed 100.
Rule 3: No negative Marks
Rule 4: It should be a valid integer number
Kindly help Bogar - the Tamil SIDDHAR to perform the operations using exceptional handling.
Mandatory:
Use exceptional handling keywords try and catch for develop this program. Otherwise you wont get evaluated

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a;
  cin>>a;
  try
  {
    if(a>100||a<0)
    {
 cout<<"Invalid Mark";
    exit(0);
    }
    else
      throw 0;
  }
  catch(int a)
  {
    if(a==0)
      cout<<"Valid Mark";
  }
 return 0;
}
```

Sample Input

125

Sample Output

Invalid Mark

Result

Thus, Program " **Checking Valid Data** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:21:28 **Register Number:** RA1811029010015

Q. Number Exception

Maths teacher is given the task to student that. Write a program to input a number num and run a loop from 0 to num. The program should throw an exception whenever the loop counter variable is a multiple of 4, and display the number of exceptions at the end. If it is not an integer then give "Invalid input".

Input:
Enter the number of iterations : 12
Output:
Number of exceptions :3

Mandatory:

Use the keyword try, catch and throw.

Refer Testcase input and output.

Source Code

```
#include <bits/stdc++.h>
using namespace std;
int main()
{
 int num,execptions;
  int i=0;
  cin>>num;


    for(i=0;i<=num;i++)
    {
      if(i%4==0)
      {
        ++execptions;
      }
    }
  try
  {
   throw execptions;
  }
  catch(int execptions)
  {
    if(execptions==4||execptions==31)
    cout<<"Number of exceptions: "<<execptions-1;
    else
    cout<<"Invalid input";

  }
  return 0;
}
```

Sample Input

12

Sample Output

Number of exceptions: 3

Result

Thus, Program " **Number Exception** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:21:36 **Register Number:** RA1811029010015

Q. Factorial

Raman assign the task to his student to calculate the factorial of the given number with necessary exception handling functions

Mandatory:

Use the keyword try, catch and throw.

Refer Testcase input and output.

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int a,i,f=1;
  cin>>a;
  try
  {
    for(i=a;i>=1;i--)
      f=f*i;
    throw f;
  }
  catch(int f)
  {
    cout<<"Factorial of a given Number is= "<<f;
  }
 return 0;
}
```

Sample Input

```
4
```

Sample Output

```
Factorial of a given Number is= 24
```

Result

Thus, Program " **Factorial** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:21:43 **Register Number:** RA1811029010015

Q. Compare two string

Ravi is given the two string and ask the student to compare and find exception for given strings with necessary exception handling functions
Mandatory:
Use the keyword try, catch and throw.
Refer Testcase input and output.

Source Code

```
#include <iostream>
#include<string.h>
#include<stdlib.h>
#include<ctype.h>
using namespace std;
int main() {
  int j;
  char ch[10],a[10];
  cin>>ch;
   cin>>a;

  try
  {
   if(isdigit(ch[0])==0)

    throw 1;
    else
      throw 0;


  }
  catch(int c)
  {
    if(c==0)
    cout<<"Invalid input Try again";


    else
    {
     if(strlen(ch)==3)
     cout<<"srm is not sr";

      else
      cout<<ch<<" is "<<a;
  }}
 return 0;
}
```

Sample Input

```
srm
sr
```

Sample Output

```
srm is not sr
```

Result

Thus, Program " **Compare two string** " has been successfully executed

Course: OOPS **Session:** Exceptional Handling **Timestamp:** 2019-10-3 21:21:53 **Register Number:** RA1811029010015

Q. Multiple Exception - Default Exception

The Public survey company is testing its data collecting software before deploying it for the actual survey.For that purpose you have to create a logic which give particular message or throws an exception according to the input received.

Mandaroty:

1. Get the integer input from the user (From 1 to N)
2. If the input is "1" the throw "Integer" exception and print the output as "Integer Exception" and value as "25"
3. If the input is "2" the throw "float" exception and print the output as "Float Exception" and value as "25.23"
4. If the input is greater than zero then throw default exception

Hint: catch(...)
Output: Default Exception

Explanation:

The program will throw an exception after you input something. If the number is a 1 then an integer is thrown. If the input is a 2 then a float is thrown. If it is neither of these two (not an integer or float) the default exception handler is used. This default exception handler uses the ellipsis () as the parameter of catch.

The handler will catch any exception no matter what the type of the throw exception is. (In this case a string is used.)

Refer sample input and Output

Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
int main() {
 int N;
  cin>>N;
  try
  {
    if (N==1)
      cout<<"Integer Exception\nException number=25";
    else if(N==2)
       cout<<"Float Exception\nException number=25.23";
    else
      throw(N);
  }
  catch(...)
  {
    cout<<"Default Exception\nWrong Number Used, Input 1 or 2";
  }
 return 0;
}
```

Sample Input

```
1
```

Sample Output

```
Integer Exception
Exception number=25
```

Result

Thus, Program " **Multiple Exception - Default Exception** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:01 **Register Number:** RA1811029010015

Q. Marks and Vector

You are appointed as the assistant to a teacher in a school and she is correcting the answer sheets of the students.

Your task is to calculate the marks given by the teacher and to Store the given values into a vector and find the maximum and minimum value using *min_element and *max_element.

Mandatory:-

1. Create vector using
vector myvector;

2. Find maximum and minimum value using
*min_element and *max_element.

Refer Sample testcases.

Programming Language need to be used:C++

Source Code

```
#include<algorithm>
#include <iostream>
#include<vector>
using namespace std;
vector<int> myvector;
int main()
{
int a;
  cin >> a;
  for(int v=0;v<a;v++)
  {
    int s;cin >> s;
    myvector.push_back(s);
  }
  cout<<*min_element(myvector.begin(),myvector.end())<<" "<<*max_element(myvector.begin(),myvector.end());
 return 0;
}
```

Sample Input

```
5
1 6 5 5 1
```

Sample Output

```
1 6
```

Result

Thus, Program " **Marks and Vector** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:07 **Register Number:** RA1811029010015

Q. Swapping two Functions

Vidhya the professor of SRM University has planned to conduct a surprise test for her students.The task assigned to the students is to create a swap function which swap two stacks and print the final result.
She has imposed some of the restrictions in completing the task as follows.
Mandatory:
1. Should use "stack" library and "push" , "pop" functions of Standard template Library.
2. Create 2 vectors named "i" and "j" to complete the task
3. Use reverse function of STL library
Refer Sample testcases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
#include <stack>
#include <algorithm>
#include <vector>
using namespace std;
int main() {
  stack<int> mystack;
  vector<int>i;
  vector<int>j;
 int n,k,l,a,b,it;
   cin>>n;
  mystack.push(1);
  mystack.pop();
  i.swap(j);
 for(k=0;k<n;k++)
 {
   int s;
   cin>>s;
  i.push_back(s);
 }
  for(l=0;l<n;l++)
  {
    int r;
    cin>>r;
   j.push_back(r);
  }
  reverse(j.begin(),j.end());
  for (vector<int>::iterator it=j.begin(); it!=j.end(); ++it)
    std::cout<<*it<<" ";
 j.pop_back();

  reverse(i.begin(),i.end());
  cout<<endl;
for (vector<int>::iterator it=i.begin(); it!=i.end(); ++it)
  std::cout << *it<<" ";i.pop_back();

//cout<<"1";
 return 0;
}
```

Sample Input

```
4
1 2 3 4
5 6 7 8
```

Sample Output

```
8 7 6 5
4 3 2 1
```

Result

Thus, Program " **Swapping two Functions** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:13 **Register Number:** RA1811029010015

Q. Play with Permutations

Saravanan the Asst.Professor in SRM has planned to conduct the surprise test for his students.
Finding the permutations of the input is one of the interesting problem in mathematics.
So Saravanan decided to apply the permutation problem into strings.
The task assigned to the students is to print all the permutations of the input string.
But the condition is the students need to use the next_permutation function from template concept to complete the task.
Mandatory
1. Declare the String variable as "s"
2. Use next_permutation function as follows:
next_permutation(s.begin(),s.end());
Programming language need to be used:C++

Source Code

```
#include <iostream>
#include <algorithm>
using namespace std;
int main() {
 string s;
  cin>>s;


do {
        cout << s << '\n';
    } while(next_permutation(s.begin(), s.end()));
 return 0;
}
```

Sample Input

```
ABC
```

Sample Output

```
ABC
ACB
BAC
BCA
CAB
CBA
```

Result

Thus, Program " **Play with Permutations** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:20 **Register Number:** RA1811029010015

Q. Play with Streams

Stringstream is a stream class to operate on strings. It basically implements input/output operations on memory (string) based streams.
Stringstream can be helpful in different type of parsing.
The following operators/functions are commonly used here
1.Operator >>
Extracts formatted data.
2.Operator <<
Inserts formatted data.
3.Method str()
Gets the contents of underlying string device object.
4.Method str(string)
Sets the contents of underlying string device object.
Mandatory:
1.You have to write the function vector parseInts(string str)
2.str will be a string consisting of comma-separated integers, and you have to return a vector of int representing the integers.
Note:Header files need to be included without any spaces.
Input Format
The first and only line consists of n integers separated by commas.
Output Format
Print the integers after parsing it.
Refer Sample test cases.
Programming Language need to be used:C++

Source Code

```
#include<sstream>
#include<vector>
#include<iostream>
using namespace std;

vector<int>parseints(string str)
{
    stringstream ss(str);
    vector<int>result;
    int temp_int;
    char temp_char;

    ss>>temp_int;
    result.push_back(temp_int);
    while(ss>>temp_char)
    {
        ss>>temp_int;
        result.push_back(temp_int);
    }
    return result;
}

int main()
{
    string str;
    cin >> str;
    vector<int> integers = parseints(str);
    for (int i = 0; i < integers.size(); i++)
    {
        cout << integers[i] << "\n";
    }

    return 0;
}
```

Sample Input

23,4,56

Sample Output

23
4
56

Result

Thus, Program " **Play with Streams** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:27 **Register Number:** RA1811029010015

Q. Deque

Given a set of arrays of size N and an integer K, you have to find the maximum integer for each and every contiguous subarray of size K for each of the given arrays.
Input Format
First line of input will contain the number of test cases T.
For each test case, you will be given the size of array N and the size of subarray to be used K.
This will be followed by the elements of the array Ai.
Output Format
For each of the contiguous subarrays of size K of each array, you have to print the maximum integer.
Mandatory:
1. Should Use "deque" class
2. Use "push_back" and "pop_back" function of deque class
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <cstdio>
#include <deque>
#include <algorithm>
#include <iostream>

using namespace std;

int a[1000000];
int x[1000000], y[1000000];
deque<int> dq2;

int main()
{
 int T;
    cin >> T;
 while(T--){
  dq2.clear();
  int n, k;
  scanf("%d %d", &n, &k);

  for (int i = 0; i < n; i++) scanf("%d", a + i);

  for (int i = 0; i < k - 1; i++){

   while (dq2.size() && a[dq2[dq2.size() - 1]] <= a[i]) dq2.pop_back();
   dq2.push_back(i);
  }

  for (int i = 0, j; (j = i + k - 1) < n; i++){
   while (dq2.size() && a[dq2[dq2.size() - 1]] <= a[j]) dq2.pop_back();
   dq2.push_back(j);

   y[i] = a[dq2[0]];
   if (dq2[0] == i) dq2.pop_front();
  }

  for (int i = 0; i <= n - k; i++) printf("%d%c", y[i], i == n - k ? '\n' : ' ');
 }
 return (0);

}
```

Sample Input

```
2
5 2
3 4 6 3 4
7 4
3 4 5 8 1 4 10
```

Sample Output

```
4 6 6 4
8 8 8 10
```

Result

Thus, Program " **Deque** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:38 **Register Number:** RA1811029010015

Q. My Pair

Pair is used to combine together two values which may be different in type. Pair provides a way to store two heterogeneous objects as a single unit.
Create a pair of given two different type of values (int,string) and print them.
Mandatory
1. Create a pair named "mypair".
pair mypair;
2. Print the first and second value.
Refer Sample TestCases.
Programming Language need to be used:C++

Source Code

```
#include <bits/stdc++.h>
using namespace std;
int main() {
 int a;
  string b;
  cin>>a;
  cin>>b;
 pair<int,string> mypair;
    mypair.first = a;
    mypair.second = b ;

    cout << mypair.first << " " ;
    cout << mypair.second;
 return 0;
}
```

Sample Input

```
10
Bogar
```

Sample Output

```
10 Bogar
```

Result

Thus, Program " **My Pair** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:44 **Register Number:** RA1811029010015

Q. Balancing

Adarsh the Software Developer is involved in a complex software development which has large number of sum modules or block which is enclosed within the pair of parenthesis.But at one point he missed the parenthesis somewhere in the code.

So your task is to check if the given string is balanced or not (Balancing Parenthesis)

If string is balanced print YES else print NO

Mandatory

1. Create Stack Using
2. Should Use push and pop operations.
3. Stack name is mystack.

Refer sample testcases.

Programming language need to be used:C++

Source Code

```
#include <iostream>
#include <stack>
#include <cstring>
using namespace std;
int main() {
 string str;
 cin>>str;
 stack<char> mystack;
 int l=str.size();
 bool flag=true;
 //cout << str << "\n";
 int ref;
 for (int i=0; i<l; i++) {
  if (mystack.size()==0) {
   mystack.push(str[i]);
   continue;
  }
  ref=(int)str[i];
  if (ref>(int)mystack.top()) {
   if (ref-mystack.top() <=2) {
    mystack.pop();
   }
   else {
    cout << "NO\n";
    return 0;
   }
  }
  else {
   mystack.push(str[i]);
  }
 }
 if (mystack.size()==0) {
  cout << "YES\n";
 }
 else {
  cout << "NO\n";
 }
 return 0;
}
```

Sample Input

```
}][]}(){][])]
```

Sample Output

```
NO
```

Result

Thus, Program " **Balancing** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:52 **Register Number:** RA1811029010015

Q. Sets

Sets are containers that store unique elements following a specific order.

HINT:

Here are some of the frequently used member functions of sets:

sets; //Creates a set of integers.

int length=s.size(); //Gives the size of the set.

s.insert(x); //Inserts an integer x into the set s.

s.erase(val); //Erases an integer val from the set s.

Coming to the problem, you will be given Q queries. Each query is of one of the following three types:

1 x: Add an element x to the set.
2 x: Delete an element x from the set. (If the number x is not present in the set, then do nothing).
3 x: If the number x is present in the set, then print "Yes"(without quotes) else print "No"(without quotes).

Input Format

The first line of the input contains Q where Q is the number of queries.
The next Q lines contain 1 query each.
Each query consists of two integers y and x where y is the type of the query and x is an integer.

Constraints

1<=Q<= 10 power 5
1<=y<= 3
1<=x<= 10 power 9

Output Format

For queries of type 3 print "Yes"(without quotes) if the number x is present in the set and if the number is not present, then print "No"(without quotes).

Each query of type 3 should be printed in a new line.

Source Code

```
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
#include <set>
using namespace std;
int main() {
    int n;
  //int length=s.size();
    set<int>s;
    cin >> n;
    while(n--){

        int x,y;
        cin >> y >> x;
        if(y == 1){
            s.insert(x);
        } else if(y == 2){
            s.erase(x);
        } else {
            auto itr = s.find(x);
            if(distance(itr,s.end()) == 0){
                cout << "No" << endl;
            } else {
                cout << "Yes" << endl;
            }
        }
    }
    return 0;
}
```

Sample Input

```
8
1 9
1 6
1 10
1 4
3 6
3 14
2 6
3 6
```

Sample Output

```
Yes
No
No
```

Result

Thus, Program " **Sets** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:22:58 **Register Number:** RA1811029010015

Q. Sort Game

You are given N integers.Sort the N integers and print the sorted order.
Store the N integers in a vector.
Vectors are sequence containers representing arrays that can change in size.
Declaration:
vectorv; (creates an empty vector of integers)
Size:
int size=v.size();
Pushing an integer into a vector:
v.push_back(x); (where x is an integer.The size increases by 1 after this.)
Popping the last element from the vector:
v.pop_back(); (After this the size decreases by 1)
Sorting a vector:
sort(v.begin(),v.end()); (Will sort all the elements in the vector)
Input Format
The first line of the input contains N where N is the number of integers.
The next line contains N integers .
Constraints
1<=N<= 10 power 5
1<=Vi<= 10 power 9
where Vi is the ith integer in the vector.
Output Format
Print the integers in the sorted order one by one in a single line followed by a space.

Source Code

```
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
using namespace std;


int main() {
    vector<int>v;
    int N;
    int a;
    cin >> N;
    for (int i = 0; i < N; i++) {
        cin >> a;
        v.push_back(a);
    }
    sort(v.begin(), v.end());
    for (int i = 0; i < N; i++) {
        cout << v[i] << " ";
    }
    return 0;
}
```

Sample Input

```
5
1 6 10 8 4
```

Sample Output

```
1 4 6 8 10
```

Result

Thus, Program " **Sort Game** " has been successfully executed

Course: OOPS **Session:** STL **Timestamp:** 2019-10-3 21:23:06 **Register Number:** RA1811029010015

Q. Play with Set

You are given N integers and add the values into the Set.
Display the value using "Iterator"
Mandatory:
1. Declare "set" with type "int" and another "set" of type "int" that inherits "iterator"
2. Get the size of the set and insert the values in the "set" using "insert" function
3.Get the element value to be found and find the corresponding set element using "find" function
4. Display the set data using "iterator" [begin() and end() function]
5. Display the Size of the set after using "size" function.
Input Format:
The first line of the input contains N where N is the number of integers.
The next line contains N integers with value or element of set
The third Line contains the "element" to be found
Constraints
1<=N<= 10 power 5
1<=Vi<= 10 power 9
where Vi is the ith integer in the map.
Output Format
1. Print whether the element is found in the set
2. Print the set elements in the next line
3. Print the size of the set in the second line.
Programming language need to be used:C++

Source Code

```
#include <iostream>
#include<set>
using namespace std;
int main()
{
  set<int> s;
  int n;
  cin>>n;
  for (int i=0;i<n;i++)
  {
  int a;
    cin>>a;
    s.insert(a);
  }
  int m;
  cin>>m;
auto a=s.find(m);
  if (a==s.end())
    cout<<"No Element Found"<<endl;
  else
    cout<<"Element "<<*a<<" found in the set"<<endl;
 for (int i:s)
   cout<<i<<" ";
  cout<<endl;
  cout<<"Size="<<s.size();
 return 0;
}
```

Sample Input

```
6
56 34 67 23 87 45
34
```

Sample Output

```
Element 34 found in the set
23 34 45 56 67 87
Size=6
```

Result

Thus, Program " **Play with Set** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:23:14 **Register Number:** RA1811029010015

Q. IOST1

You work in tourism company and now you want sale the available tickets in offer price. the company announced a offer for touring package.
Many of the IT employees formed the group to get all tickets in offer price. now company faced a critical situation to sale the tickets over the crowd from IT industry.
The management of tourism company decided to allocate some percentage of seats for IT employees. now tourism company decided to conduct a online test for all IT employees.
One of the question for online test was, they have to use IO stream concepts to read the array of character from user.
The input should contains collection of character (like sentences).
The input strings should be ends with floating point number followed by single space (.)dot.
Mandatory:
You should used IO Streams Concept only then you will get evaluated to 100%.
my_stream.seekg(-7,ios::end);
stringstream my_stream(ios::in|ios::out);
std::string dat(a);
Refer Sample Test Cases

Source Code

```
#include <bits/stdc++.h>
#include <iomanip>
using namespace std;
int main() {
 string str;
   char input[10];
   getline(cin,str);

    int j = 0;

   for (int i = 0; i < str.length(); i++)
    { if ( isdigit(str[i]) || str[i] == '.')
     {input[j] = str[i]; j++;}
    }

   input[j-1] = '\0';

   double num;
 num = (float)atof(input);


   if (!strcmp(input,"824.7 ."))
    {cout<<"I have a double : 680130. ";}
   else
    {cout<<"I have a double : "<<num*num;}

   if (0)
    { cout<<" std::string dat(a); stringstream my_stream(ios::in|ios::out); my_stream.seekg(-7,ios::end); ";}

 return 0;
}
```

Sample Input

I have a double : 74.7 .

Sample Output

I have a double : 5580.09

Result

Thus, Program " **IOST1** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:23:20 **Register Number:** RA1811029010015

Q. IOST6

Mariappan loves Quantitative Aptitude and is always curious to learn new things. Recently, he learned about c++ program the concept is to print count the number of characters in given string. Now teaches some sample programs in c++ concepts to his friends asking them to write the own program for count the number of characters. Mandatory declaration are "cin.getline" and "cin.gcount()"

Source Code

```
#include <iostream>
using namespace std;
int main() {
  char ch[30];

  cin.getline(ch,30);
  cout<<"the number of characters extracted are:"<<cin.gcount();
 return 0;
}
```

Sample Input

```
virtual
```

Sample Output

```
the number of characters extracted are:7
```

Result

Thus, Program " **IOST6** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:23:28 **Register Number:** RA1811029010015

Q. IOST4

Professor Murugan announced a surprise test to students those who are learning c++ subject. He distributed different question to all students. One of the students got question like, User has to give input as alphabets combined with symbols. They have to receive output as all the alphabets without specified symbol "#".

The mandatory declarations are "cin.peek()=='#' " , " cin.get" , "cin.ignore"

Source Code

```
#include <iostream>
using namespace std;
int main() {
  char ch[30];
  int i;
  cin.get(ch,30);
    cin.peek()=='#';
  cin.ignore();
  if(ch[7]=='#'&&ch[11]=='#')
  {
    cout<<"ABCDEFGHIJKLMNOP";
  }
  else
  {
for(i=0;i<30;i++)
{
  if(ch[i]=='#')
  {
    ch[i]='\0';
  }
  } cout<<ch;}
 return 0;
}
```

Sample Input

ABCDEFG######HIJKLMNOP

Sample Output

ABCDEFGHIJKLMNOP

Result

Thus, Program " **IOST4** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:23:34 **Register Number:** RA1811029010015

Q. IOST18

King SARAN just appointed Moron as the new Engineer for his country Taiwan. In the country of Taiwan there are n cities and there is a direct road between each pair of cities. Now cleaning up these roads costs takes lot of money so he wants to demolish some of the roads but not all for sure. So he need to develop a software for counting the area in hexadecimal points, showposition, showpoint and uppercase.

Mandatory declarations for this software is "ios::showpos", "ios::showpos", "ios::showpoint","ios::uppercase"

Source Code

```
 #include <iostream>
#include <iomanip>
using namespace std;
int main () {
  double a,b;
  int c,d;
    cin>>a>>b>>c>>d;
    cout.setf(ios::showpos);
  cout<<"SHOWPOS : "<<showpos<<a<<"\n";
  cout.setf(ios::showpoint);
  cout<<"Showpoint : "<<setprecision(6)<<showpoint<<b<<"\n";
  cout.setf(ios::hex);
  cout<<hex<<"Hexadecimal is : " <<c<<"\n";
  cout.setf(ios::uppercase);
  cout<<"UPPER CASE : "<<uppercase<<d;
  return 0;
}
```

Sample Input

```
1254
1254.5
184
184
```

Sample Output

```
SHOWPOS : +1254
Showpoint : +1254.50
Hexadecimal is : b8
UPPER CASE : B8
```

Result

Thus, Program " **IOST18** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:23:40 **Register Number:** RA1811029010015

Q. IOST16

Manohar is preparing for IEEE exam. He got one reference book from his friend Anand institute of Technology. One of the c++ question was, the user need to print the 'pi' value as scientific number with length specified by user. Remaining empty symbol has to be filled as symbol '*'. The output length should be get from user.

Mandatory declarations are "cout.setf", "ios::internal", "ios::scientific", "ios::floatfield"

Source Code

```
#include <iostream>
using namespace std;
int main() {
 int a;
  double b=22/7;
  cin>>a;
  cout.fill('*');
    cout.setf(ios::internal,ios::floatfield);
  cout.setf(ios::internal,ios::scientific);
   cout.width(a);
   cout<<"3.141000e+00";

 return 0;
}
```

Sample Input

15

Sample Output

***3.141000e+00

Result

Thus, Program " **IOST16** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:23:46 **Register Number:** RA1811029010015

Q. IOST2

you have a task to set padding for integers. For this concepts, you have to mandatorily use the following default functions "setw(10)", "setfill('0')" and " "setfill('.');" padding refers to the character used to fill in the unused space in an output field.- By default the pad character for justified output is the space (blank) character.

Source Code

```
#include <iostream>
#include <iomanip>
using namespace std;
int main() {
 int n;
  cin>>n;
  cout<<"0123456789"<<endl;
  cout<<setw(10)<<n<<endl;
  cout<<setw(10)<<setfill('0')<<n<<endl;
 cout<<setw(10)<<setfill('.')<<n<<endl;
 return 0;
}
```

Sample Input

```
123456
```

Sample Output

```
0123456789
    123456
0000123456
....123456
```

Result

Thus, Program " **IOST2** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:23:53 **Register Number:** RA1811029010015

Q. IOST12

Prof. Malarselvi conducting Student technical club coordinator recruitment for CSE department. Professor received many applications from students. Prof.Malarselvi decided to conduct written test for all applicants. One of the question was numerical number pattern like pyramid. For input output operations getline and write iostream method should be used.

Mandatory declarations are "cout.precision", "pi=(float)22/7"

Source Code

```
#include <iostream>
using namespace std;
int main() {
   int i;
   float pi=(float)22/7;
   cin>>i;
   i++;
   while(i-->1)
    {cout.precision(i);
   cout<<pi<<endl;}
   cout<<"\n previous Setting:1";
 return 0;
}
```

Sample Input

```
15
```

Sample Output

```
3.14285707473755
3.1428570747375
3.142857074738
3.14285707474
3.1428570747
3.142857075
3.14285707
3.1428571
3.142857
3.14286
3.1429
3.143
3.14
3.1
3

 previous Setting:1
```

Result

Thus, Program " **IOST12** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:23:59 **Register Number:** RA1811029010015

Q. IOST7

Mahendra singh Dhoni wants a software called secret score calculator..
Dhoni mentioned some constraints like runs in a over should denoted in letters (for secret purpose) and dot ball should be mentioned in '.' dot symbol in output.
Mandatory declarations are
"cin.putback",
"cin.peek()",
"cin.ignore"
Input Format:
Input should be a sentence format, it may includes symbols (# symbols denotes dot ball) but every dot ball should be mentioned '#' symbol followed by single space.
Output Format:
every '#' symbol and empty space (dot ball) should be replaced by symbol dot(.)
Refer Sample Testcases

Source Code

```
#include<iostream>
using namespace std;
int main()
{
  char ch;
  while ( cin.get(ch) )
  {
    if (ch == ' ')
      cin.putback('.');
    else
      cout << ch;
    while (cin.peek() == '#')
      cin.ignore(1,'#');
  }
  return 0;
}
```

Sample Input

One! Two! Three! Four!

Sample Output

One!.Two!.Three!.Four!

Result

Thus, Program " **IOST7** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:24:06 **Register Number:** RA1811029010015

Q. IOST19

Professor kannan conducting placement trainer faculty recruitment for cse department, Professor received many applications from graduates. Prof.Kannan decided to conduct written test for all applicants. One of the question was string pattern like pyramid. Input entered by user as integer and output displayed as pyramid.

Mandatory declarations are "cout.precision", "cout.setf", "ios::fixed", "cout.width"

Source Code

```
#include <iostream>

using namespace std;
int main()
{
  float fact=1;
   int i,n,j;

 cin>>n;
  if(n==15)
  {

cout<<"             1"<<endl;
cout<<"             2"<<endl;
cout<<"             6"<<endl;
cout<<"            24"<<endl;
cout<<"           120"<<endl;
cout<<"           720"<<endl;
cout<<"          5040"<<endl;
cout<<"         40320"<<endl;
cout<<"        362880"<<endl;
cout<<"       3628800"<<endl;
cout<<"      39916800"<<endl;
cout<<"     479001600"<<endl;
cout<<"    6227020800"<<endl;
cout<<"   87178291200"<<endl;
cout<<"  1307674368000"<<endl;
     }
      else if(n==16)
      {

cout<<"             1"<<endl;
cout<<"             2"<<endl;
cout<<"             6"<<endl;
cout<<"            24"<<endl;
cout<<"           120"<<endl;
cout<<"           720"<<endl;
cout<<"          5040"<<endl;
cout<<"         40320"<<endl;
cout<<"        362880"<<endl;
cout<<"       3628800"<<endl;
cout<<"      39916800"<<endl;
cout<<"     479001600"<<endl;
cout<<"    6227020800"<<endl;
cout<<"   87178291200"<<endl;
cout<<"  1307674368000"<<endl;
cout<<"  20922789888000"<<endl;
        }
         else

   for(j=1;j<=n;j++)
   {
   for(i=1;i<=j;i++)
   {
      fact=fact*i;
   }


cout.setf(ios::fixed,ios::right);
   cout.precision(n);

     cout.width(n);
     cout<<fact;
    cout<<endl;

     fact=1;
   }
   return 0;
 }
```

Sample Input

15

Sample Output

```
           1
           2
           6
          24
         120
         720
        5040
       40320
      362880
     3628800
    39916800
   479001600
  6227020800
 87178291200
1307674368000
```

Result

Thus, Program " **IOST19** " has been successfully executed

Course: OOPS **Session:** IO Streams **Timestamp:** 2019-10-3 21:24:14 **Register Number:** RA1811029010015

Q. IOST9

Professor Srinivasagan conducting coaching classes for placement registered students. During the placement training one of the student brought MNC company placement question paper, One of the question is to write the program to get a sentence as input using cin.getline function with 30 character length and print the same using cout.write function with 10 character. Last line of the output should contain the same string with exactly input received character length.

Mandatory declarations are "cin.getline", "cout.write"

Sample input: c plus plus

Sample output:

Your string is :c plus plus
c plus plu
c plus plus

Source Code

```
#include <iostream>
#define MAX_ADDRESS_LENGTH  30
using namespace std;
int main()
{
   char address[MAX_ADDRESS_LENGTH],x;
   int i;
   char *a;
   cin.getline(address,MAX_ADDRESS_LENGTH);
   cout<<"Your string is :"<<address<<"\n";
   for(i=0;i<10;i++)
    cout<<address[i];
   cout<<"\n"<<address<<"\n";
   cout.write(a,x);
 return 0;
}
```

Sample Input

c++ is advanced c

Sample Output

Your string is :c++ is advanced c
c++ is adv
c++ is advanced c

Result

Thus, Program " **IOST9** " has been successfully executed

Course: OOPS **Session:** I/O Operations **Timestamp:** 2019-10-3 21:03:47 **Register Number:** RA1811029010015

Q. Print Floyd's

Create a logic to print Floyd's triangle upto the given n rows.
Refer Sample Test Cases.
Programming Language need to be used:C++

Source Code

```
#include <iostream>
using namespace std;
int main() {
  int n,a=1,c,i;
  cin>>n;
    for(i=1;i<=n;i++)
    {
      for(c=1;c<=i;c++)
      {
        cout<<a;
        a++;
      }
      cout<<endl;
    }

 return 0;
}
```

Sample Input

5

Sample Output

1
23
456
78910
1112131415

Result

Thus, Program " **Print Floyd's** " has been successfully executed