Course: C **Session:** Control and Looping **Timestamp:** 2021-1-9 18:11:41 **Register Number:** RA2031241010094

Q. Sum of Digits

You're given an integer N. Write a program to calculate the sum of all the digits of N.
Input
The first line contains an integer T, total number of testcases. Then follow T lines, each line contains an integer N.
Output
Calculate the sum of digits of N.

Source Code

```
#include <stdio.h>
int main()
{
  int t,n,i,m,d,s=0;
  scanf("%d",&t);
  for(i=1;i<=t;i++)
      {
        scanf("%d",&n);
        m=n;
        while(m>0)
        {
          d=m%10;
          s=s+d;
          m=m/10;
        }
       printf("%d\n",s);
    s=0;
      }
 return 0;
}
```

Sample Input

```
3
12345
31203
2123
```

Sample Output

```
15
9
8
```

Result

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

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Q. FIND PEAK ELEMENT

Take an input array.The array consists of list of numbers, where num[i] is not equal to num[i+1].The mission is to print the peak element and also print its index value.INPUT FORMAT: Get an input array with a list of numbers. OUTPUT FORMAT:Print the peak element (largest element) with its index value. EXPLANATION: Get an input array which must contain a series of numbers. And now,the doer has to find out the peak element in that array. So, finally print the peak element (largest element in the array).Along with its index number as shown in the format.

Source Code

```
#include <stdio.h>
int main()
{
  int a[100],n,i,max,p=0;
  scanf("%d",&n);
  for(i=0;i<n;i++)
  {
    scanf("%d",&a[i]);
    max=a[0];
  }
  for(i=1;i<n;i++)
    {
      if(a[i]>max)
      {
        max=a[i];
        p=i;
      }
    }
  printf("Peak Element=%d\n",max);
  printf("Index Value=%d",p);
  return 0;
}
```

Sample Input

```
4
1 2 3 1
```

Sample Output

```
Peak Element=3
Index Value=2
```

Result

Thus, Program " **FIND PEAK ELEMENT** " has been successfully executed

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Q. SUM of all integers

"Yesterday, puppy Tuzik learned a magically efficient method to find the sum of the integers from 1 to N. He denotes it as sum(N). But today, as a true explorer, he defined his own new function: sum(D, N), which means the operation sum applied D times: the first time to N, and each subsequent time to the result of the previous operation.
For example, if D = 2 and N = 3, then sum(2, 3) equals to sum(sum(3)) = sum(1 + 2 + 3) = sum(6) = 21.
Tuzik wants to calculate some values of the sum(D, N) function. Will you help him with that?

Source Code

```
#include <stdio.h>
int main()
{
  int n,d,t,i,s,j,sum=0;
  scanf("%d\n",&t);
  for(i=1;i<=t;i++)
  {
    scanf("%d %d\n",&d,&n);
    s=d*n;
    for(j=1;j<=s;j++)
      sum=sum+j;
  printf("%d\n",sum);
  sum=0;
  }
 return 0;
}
```

Sample Input

```
2
1 4
2 3
```

Sample Output

```
10
21
```

Result

Thus, Program " **SUM of all integers** " has been successfully executed

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Q. TRIANGULAR NUMBERS

"A triangular number is the number of dots in an equilateral triangle uniformly filled with dots. For example, three dots can be arranged in a triangle; thus three is a triangular number. The n-th triangular number is the number of dots in a triangle with n dots on a side. . You can learn more about these numbers from Wikipedia (http://en.wikipedia.org/wiki/Triangular_number).
Your task is to find out if a given integer is a triangular number.
Input
The first line contains the single number n (1 Output
If the given integer is a triangular number output YES, otherwise output NO.

Source Code

```
#include <stdio.h>
int main()
{
  int i,sum=0,n,c=0;
  scanf("%d",&n);
  if(n>0)
    {
  for(i=1;i<=n;i++)
  {
    sum=sum+i;
    if(sum==n)
      c=1;
  }
  if(c==1)
    printf("YES");
    else
    printf("NO");
  }
 return 0;
}
```

Sample Input

1

Sample Output

YES

Result

Thus, Program " **TRIANGULAR NUMBERS** " has been successfully executed

Course: C **Session:** Control and Looping **Timestamp:** 2021-1-9 19:03:10 **Register Number:** RA2031241010094

Q. A Task

A task is given to 3 persons to complete it within a particular time. If the person exceeds the time limit he will be disqualified . Only those who complete it within the given time limit is qualified. Among the qualified persons. the person who complete the task first will be rewarded.Write a C program to find the person who is rewarded.

Input Format:

First Input corresponds to the time limit for the task in hours . Second, third and fourth input corresponds to the number of hours taken by the first, second and third persons respectively to complete the task.

Output format:

Display the person who completes first.

5
4 4 1
Third person wins!!

4
1 2 3
First person wins!!

Source Code

```
#include <stdio.h>
int main()
{
  int a,b,c,t;
  scanf("%d",&t);
  scanf("%d %d %d",&a,&b,&c);
  if(t>a||t>b||t>c)
    {
      if(a<b&&a<c)
      {
        printf("First person wins!!");
      }
      else if(b<a&&b<c)
      {
        printf("Second person wins!!");
      }
      else if(c<a&&c<b)
      {
        printf("Third person wins!!");
      }
    }
   else
 printf("No person wins!!");
 return 0;
}
```

Sample Input

10
5 4 7

Sample Output

Second person wins!!

Result

Thus, Program " **A Task** " has been successfully executed

Q. Lab seating arrangement

There are 2 Programming Labs , Each with a seating capacity of 90. There are 240 students with registration numbers from 1 to 240. All 240 students cannot be accommodated in the labs at the same time. It has been decided to conduct theory class for 60 students every week. It has been planned to conduct theory classes for all students with register number being a multiple of 4. Students with registration number from to 1 to 120 with registration number not a multiple of 4 need to be seated in programming lab1 and students with registration numbers from 121 to 240 with registration numbers not a multiple of 4 need to be seated in programming lab II.

Given the registration number of student, write a C program to specify the lab or hall in which student need to be seated.

Input Format:

Input consists of 1 integer which corresponds to the registration number of the student.

Output format:

Output consists of string "Lab 1" or "Lab 2" or "Theory session" or "Incorrect Register Number"

Refer sample input and output for further formatting specifications.

Example 1:

99

Output=Lab 1

Example 2:

241

Output=Incorrect Register Number

Source Code

```
#include <stdio.h>
int main()
{
  int r;
  scanf("%d",&r);
  if(r<240)
  {
    if(r%4==0)
    {
      printf("Theory session");
    }
    else if(r>=1&&r<=120)
    {
      printf("Lab 1");
    }
    else if(r>=121&&r<=240)
    {
      printf("Lab 2");
    }
  }
  else
  printf("Incorrect Register Number");
 return 0;
}
```

Sample Input

16

Sample Output

Theory session

Result

Thus, Program " **Lab seating arrangement** " has been successfully executed

Q. Print 8- Count and sum of even and odd numbers

Write a C program to find the sum of odd numbers and sum of even numbers from 1 to N. Output the computed sums on two different lines with suitable headings

(Inclusive of both positive and negative numbers)

Input format:

Input consists of n+1 integers. The first integer corresponds to n and the next n integers correspond to the numbers to be added. Consider 0 to be a positive number

Example 1:
Input: 10

Output:
Odd=25
(1+3+5+7+9) = 25
Even=30
(2+4+6+8+10)=30

If the input number is odd then the user should throw the message as "Wrong Input"

Example 2:
Input : 11
Output=Wrong Input

Source Code

```
#include <stdio.h>
int main()
{
  int e=0,o=0,n,i;
  scanf("%d",&n);
  if(n%2==0)
  {
    for(i=1;i<=n;i++)
     {
       if(i%2==0)
         e=e+i;
       else
         o=o+i;
      }
    printf("Sum of all odd numbers=%d\n",o);
    printf("Sum of all even numbers=%d",e);
  }
  else
   printf("Wrong Input");
 return 0;
}
```

Sample Input

10

Sample Output

Sum of all odd numbers=25
Sum of all even numbers=30

Result

Thus, Program " **Print 8- Count and sum of even and odd numbers** " has been successfully executed

Course: C **Session:** Control and Looping **Timestamp:** 2021-1-9 19:04:34 **Register Number:** RA2031241010094

Q. Print 6- Count of positive and negative

Write a C program to find allow the user to enter n number and finds the number of positive numbers entered and number of negative numbers entered entered using a while loop

Input format:

Input consists of n+1 integers. The first integer corresponds to n and the next n integers correspond to the numbers to be added. Consider 0 to be a positive number

Source Code

```
#include <stdio.h>
int main()
{
  int po=0,ne=0,n,i,t;
  scanf("%d",&t);
  for(i=1;i<=t;i++)
  {
    scanf("%d",&n);
    if(n>=0)
      po++;
    else
      ne++;
  }
  printf("positive numbers count=%d\n",po);
  printf("negative number count=%d",ne);
 return 0;
}
```

Sample Input

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

Sample Output

```
positive numbers count=2
negative number count=2
```

Result

Thus, Program " **Print 6- Count of positive and negative** " has been successfully executed

Course: C **Session:** Control and Looping **Timestamp:** 2021-1-9 19:05:04 **Register Number:** RA2031241010094

Q. VALID PERFECT SQUARE

Get a positive integer. Let N be the number of test cases.Check the number whether perfect square or not.Print TRUE when the integer is perfect square.If it is not, return FALSE.Describe it without using built-in-function.Input format: The input is verified whether the number is perfect square or not. Output format: Whether the input is perfect square then true is returned, else it should return false. EXPLANATION: Get a non-negative integer from the user. Check it whether it is perfect square or not by using arithmetic functions. Print True when it is valid perfect square integer. If the integer is not valid perfect square integer, then print False. Note: Do not use any inbuilt function.

Source Code

```
#include <stdio.h>
int main()
{
  int i,n,p,c=0;;
  scanf("%d",&n);
  for(i=1;i<=n;i++)
  {
    p=i*i;
    if(p==n)
      c++;
  }
 if(c==1)
  printf("TRUE");
    else
  printf("FALSE");
  return 0;
}
```

Sample Input

34

Sample Output

FALSE

Result

Thus, Program " **VALID PERFECT SQUARE** " has been successfully executed

Course: C **Session:** Control and Looping **Timestamp:** 2021-1-9 19:05:42 **Register Number:** RA2031241010094

Q. Better or Not

One criteria for evaluating 2 different colleges is based on the student strength. Write a C program to compare 2 colleges based on the student strength
Input format:

Input consists of 2 integers. The first integer corresponds to the Number of students during the year of establishment of college 1 and the second integer corresponds to the Number of students during the year of establishment of college 2

Output format:
Output consists of the string "College 1 is Better " or "College 2 is Better".
Refer sample input and output for further formatting specifications.

Source Code

```
#include <stdio.h>
int main()
{
  int a,b;
  scanf("%d\n%d",&a,&b);
  if(a>b)
    printf("College 1 is better");
  else
    printf("College 2 is better");
 return 0;
}
```

Sample Input

```
1000
1200
```

Sample Output

```
College 2 is better
```

Result

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