S A

UNIVERSITY

Subject

Programming and Data Structures using C

Assignment 5

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Write a C Program for the following problem statements

Q1. find the sum of first 10 natural numbers.
(Using for loop)

```
#include <stdio.h>

int main()
{
    int s;
    for (int e;e<10;e++){
        s=s+e;
    }
printf("Teh sum of first natural number is %d",s);
    return 0;
}
```

Output

```
Teh sum of first natural number is 45
```

Q2. display the multiplication table of a given integer
(Using while loop)

```
#include <stdio.h>

int main()
{
   int s,e=1;
   printf("enter the integer to get table :");
   scanf("%d",&s);
   while( e<=10){
      printf("%d X %d = %d\n",s,e,(e*s));
      ++e;
   }

   return 0;
}
```

Output

```
enter the integer to get table :11
11 X 1 = 11
11 X 2 = 22
11 X 3 = 33
11 X 4 = 44
11 X 5 = 55
11 X 6 = 66
11 X 7 = 77
11 X 8 = 88
11 X 9 = 99
11 X 10 = 110
```

Q3. display the n terms of odd natural number and their sum
(Using do...while loop)

```
#include <stdio.h>

int main()
{
    int s,e=1,o;
    printf("enter the integer :");
    scanf("%d",&s);
   do{
       if((e%2)==1)
       o=o+e;
        ++e;
    } while( e<=s);
printf("sum of all odd integer is %d",o);
    return 0;
}
```

Output

```
enter the integer :9
sum of all odd integer is 25
```

Q4. display the pattern like right angle triangles.
(Using for loop)

```
*
**
***
****
```

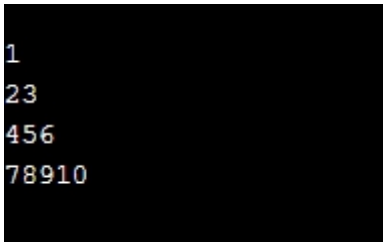
```
#include <stdio.h>

int main()
{
    int s,d=1,o;

   for(int e;e<5;e++){
       d=0;
       for(d;d<=4;d++){
        if(d<=e)
        printf("*");
        if(d==4)
        printf("\n");
       }}
    return 0;
}
```

Output

Q5. display the pattern like right angle triangles.
(Using while loop)
1
2 3
4 5 6
7 8 9 10

```
#include <stdio.h>

int main()
{
    int s,d=1,o=1,e;

   while(e<5){
       d=0;
       while(d<=4){
        if(d<e){
        printf("%d",o);
        ++o;
        }
        if(d==4)
        printf("\n");
       ++d;}++e;}
    return 0;
}
```

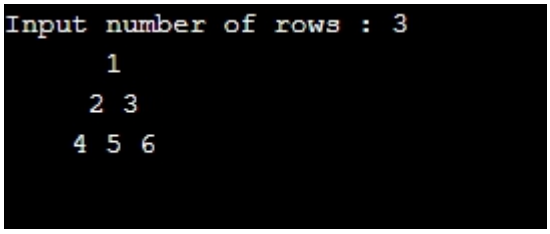
Output



Q6. make such a pattern like a pyramid with numbers
(Using do...while
loop)
1
2 3
4 5 6
7 8 9 10

```
#include <stdio.h>
void main()
{
   int i,j,spc,rows,k,t=1;
   printf("Input number of rows : ");
   scanf("%d",&rows);
   spc=rows+4-1;
   for(i=1;i<=rows;i++)
   {
        for(k=spc;k>=1;k--)
           {
             printf(" ");
           }
   for(j=1;j<=i;j++)
   printf("%d ",t++);
printf("\n");
    spc--;
   }
}
```

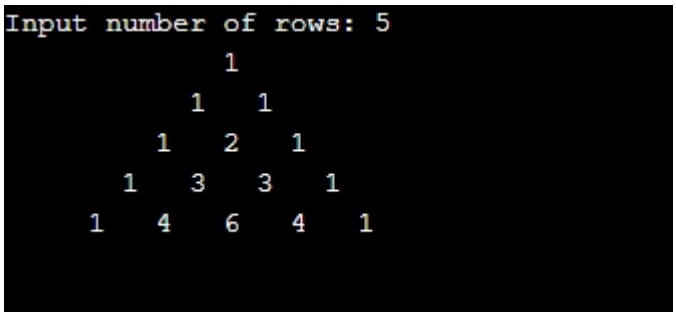
Output



Q7. display Pascal's triangle.
(Using for loop)
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1

```
#include <stdio.h>

void main()
{
   int no_row,c=1,blk,i,j;
   printf("Input number of rows: ");
   scanf("%d",&no_row);
   for(i=0;i<no_row;i++)
   {
      for(blk=1;blk<=no_row-i;blk++)
      printf("   ");
      for(j=0;j<=i;j++)
      {
         if (j==0||i==0)
            c=1;
         else
            c=c*(i-j+1)/j;
         printf("% 4d",c);
      }
      printf("\n");
   }
}
```

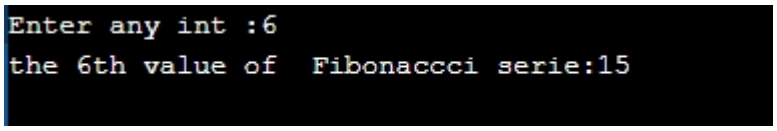
Output



Q8. display the first n terms of Fibonacci series.
(Using for loop)

```
#include <stdio.h>

int main()
{
    int s,o;
    printf("Enter any int :");
    scanf("%d",&s);
   for(int i=0;i<s;i++){
       o=o+i;
   }
   printf("the %dth value of   Fibonaccci serie:%d",s,o);
    return 0;
}
```

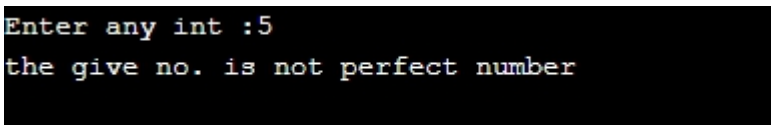
Output



Q9. check whether a given number is a perfect number or not.
(Using while loop)

```
#include <stdio.h>

int main()
{
    int s,o;
    printf("Enter any int :");
    scanf("%d",&s);
   for(int i=1;i<s;i++){
       if((s%i)==0)
       o=o+i;
   }
   if (o==s)
   printf("the give no. is perfect number");
   else printf("the give no. is not perfect number");
    return 0;
}
```

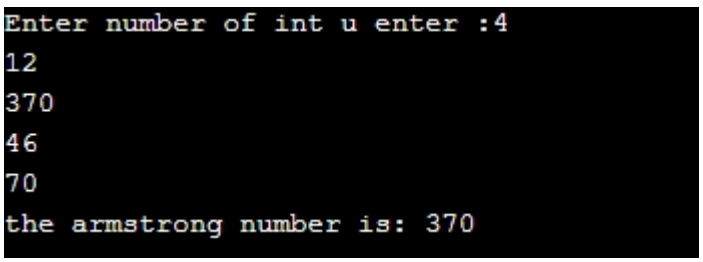
Output



Q10. find the Armstrong number for a given range of number.
(Using while loop)

```
#include <stdio.h>

int main()
{
    int s[10],o,p,q,r,i;
    printf("Enter number of int u enter :");
    scanf("%d",&q);
    i=0;
   while(i<q){ scanf("%d",&s[i]); ++i;}

   i=0;
   while(i<q){p=0;r=s[i];
       while(r!=0){
       o=(r%10)*(r%10)*(r%10);
       p=p+o;

       r=r*0.1;
       }
       if(p==s[i])
       printf("the armstrong number is: %d \n",s[i]);
i++;
   }

    return 0;
}
```

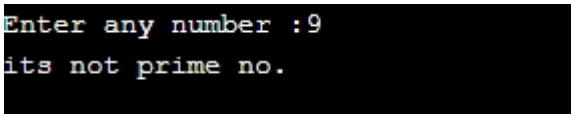
Output



Q11. determine whether a given number is prime or not.
(Using do...while loop)

```
#include <stdio.h>

int main()
{
    int q,w=0,z=1;
    printf("Enter any number :");
    scanf("%d",&q);
   do {
       if(q%z==0)
       ++w;
       z++;
   }while(z<=q);
 if(w<=2)
 printf("its prime no.");
 else printf("its not prime no.");
    return 0;
}
```

Output



Q12. display the number in reverse order.
(Using do...while loop)

```
#include <stdio.h>

int main()
{
    int q,w=0,z;
    printf("Enter any number :");
    scanf("%d",&q);
   do {

       w=q%10;
       z=z*10+w;
       q=q*0.1;

   }while(q!=0);
 printf("the reverse order of given no. is :%d",z);
    return 0;
}
```

Output

```
Enter any number :4693213
the reverse order of given no. is :3123964
```

Q13. display the sum of the series [9 + 99 + 999 + 9999 ...]
(Using for loop)

```
#include <stdio.h>

int main()
{
    int q,w=0,z=0,a=0;
    printf("Which value of 9th series you need to check   :");
    scanf("%d",&q);
   for(z=0;z<q;z++){
       a=9+a*10;
      w=w+a;
   }
 printf("the reverse order of given no. is :%d",w);
    return 0;
}
```

Output

```
Which value of 9th series you need to check  :9
the reverse order of given no. is :1111111101
```

Q14. find the sum of the series [1-X^2/2!+X^4/4!-.....].
(Using while loop)

```
#include <stdio.h>
#include <math.h>
int main()
{
    double q,w=0,z=1,a=0,b=0,c=2,d,e=0,s=1;
    printf("Which no. of term   you need to check and enter the value of x :");
    scanf("%lf %lf",&q,&b);

   while(z<q){
       e=1;
       d=1;

       while(d<=c){

          e=e*d;
          d += 1;}

       s=s*-1;
       a=s*pow(b,c)/e;
      w=w+a;
       z++;
       c=c+2;
   }
   w=w+1;
 printf("the %0.0lfth term of given series is :%lf",q,w);
    return 0;
}
```

Output

```
Which no. of term  you need to check and enter the value of x :5
5
the 5th term of given series is :2.528398
```

Q15. find the sum of the series [x -x^3 + x^5 - .....].
(Using do...while loop)

```
#include <stdio.h>
#include <math.h>
int main()
{
   float q=3,b=2,z=0,o=1,s=0,a=0,p=1;
   printf("Which no. of term   you need to check and enter the value of x :");
   scanf("%f %f",&q,&b);

   do{
      a=p*pow(b,o);
      s=s+a;
      o+=2;
      z++;
      p=p*-1;
   }while(z<q);
  printf("The %0.0fth term of given series is : %f",q,s);
   return 0;
}
```

Output

```
Which no. of term  you need to check and enter the value of x :5
5
The 5th term of given series is : 1878005.000000
```