ASSIGNMENT 4 ANSWER

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

Program:-

```
#include <stdio.h>
int main() {
   int i,sum=0;
    printf("The First 10 Natural No's are : ");
   for(i=1;i<=10;i++){
      sum=sum+i ;
    printf("%d\t",i);
   }
   printf("\nSum of The First 10 Natural No is : %d ",sum);
   return 0;
}
```

Output:-

```
The First 10 Natural No's are : 1       2       3       4       5       6       7       8
        9       10
Sum of The First 10 Natural No is : 55
```

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

Program:-

```
#include <stdio.h>
  int main() {
   int no,i=1,mul;
   printf("Enter the no : ");
   scanf("%d",&no);
   printf("Multiplication Table of %d is: ",no);
   while(i<=no)
   {
     mul=no*i;
     printf("\n%d * %d = %d",no,i,mul);
     i++;
   }
     return 0;
}
```

Output:-

```
Enter the no : 6
Multiplication Table of 6 is:
6 * 1 = 6
6 * 2 = 12
6 * 3 = 18
6 * 4 = 24
6 * 5 = 30
6 * 6 = 36
```

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

Program:-

```
#include <stdio.h>
int main() {
   int i,no,add=0;
   printf("Enter the no of terms of natural no : ");
   scanf("%d",&no);
  printf("The odd natural nos till term %d is: \n",no);
   i=1;
   do{
     printf("%d\t",i);
     add=add+i;
     i=i+2;
      }
   while(i<=no);
      printf("\nsum of the above no is: %d",add);
     return 0;
}
```

Output:-

```
Enter the no of terms of natural no : 10
The odd natural nos till term 10 is:
1        3        5        7        9
sum of the above no is: 25
```

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

*
**
***
****

Program:-

```
#include <stdio.h>

int main()
{
   int i,j;
   for(i=1;i<=4;i++)
   {
    for(j=1;j<=i;j++)
    printf ("*");
     printf("\n");
       }
           return 0;
}
```

Output:-

*
**
***
****

5. display the pattern like right angle triangles. (Using while loop)

1
2 3
4 5 6
7 8 9 10

Program:-

```
#include <stdio.h>
int main() {
   int n,i=1,j,k=1;
   printf("enter rows ");
   scanf("%d",&n);
   while(i<=n)
   {
       j=1;
    while (j<=i)
    {
            printf("%d",k);
       k++;
       j++;
    }
    i++;
    printf("\n");
   }
      return 0;
}
```

Output:-

```
enter rows 4
1
23
456
78910
```

6. make such a pattern like a pyramid with numbers (Using do...while loop)

```
   1
 2 3
4 5 6
7 8 9 10
```

Program:-

```
#include <stdio.h>
int main() {
   int r,i,j,spc,t=1,k;
   printf("Enter rows: ");
   scanf("%d",&r);
   spc=r+4-1;
   do
   {
 for(k=spc;k>=1;k--)
 {
printf(" ");
  }
for(j=1;j<=i;j++)
printf("%d ",t++);
printf("\n");
spc--;
i++;
}while(i<=r);
   return 0;
}
```

Output:-

```
   1
  2 3
 4 5 6
7 8 9 10
```

7. display Pascal's triangle. (Using for loop)

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1

Program:-

```
#include <stdio.h>
int main(){
   int r,i,j,s,k=1;
   printf("Enter the value for row:");
   scanf("%d",&r);
   for(i=0;i<r;i++) {
      for(s=1;s<=r-i;s++)
         printf(" ");
      for(j=0;j<=i;j++) {
         if(j==0 || i==0)
            k=1;
         else
            k=k*(i-j+1)/j;
         printf("%4d",k);
      }
      printf("\n");
   }
   return 0;
}
```

Output:-

Enter the value for row:4

```
   1
  1   1
 1   2   1
1   3   3   1
```

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

Program:-

```
#include <stdio.h>
int main() {
   int fst=0,scnd=1,trd,i,no;
   printf("enter no of terms of fibbonanci series : ");
   scanf("%d",&no);
   for(i=1;i<=no;i++)
   {
      printf("%d\t",fst);
     trd=fst+scnd;
     fst=scnd;
     scnd=trd;
   }
return 0;
   }
```

Output:-

```
enter no of terms of fibbonanci series : 10
0       1       1       2       3       5       8       13      21      34
```

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

Program:-

```
#include <stdio.h>
int main() {
   int no,s=0,i=1,a;
   printf("enter a no: ");
   scanf("%d",&no);
   while (i<no)
   {
      a=(no%i);
      if (a==0)
      s=s+i;
      i++;
      }
            if (s==no)
          printf("\"%d\" is a perfect no.",no);
          else
          printf(" \"%d\" is  not perfect no.",no);
         return 0;
}
```

Output:-

enter a no: 6

“6" is a perfect no.

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

Program:-

```
#include <stdio.h>
int main() {
  int no,rem,sum=0,nn;
  printf("Enter a no : ");
  scanf("%d",&no);
  nn=no;
  while(no>0)
  {
     rem=no%10;
     sum=sum+(rem*rem*rem);
     no=no/10;
  }
  if (nn==sum)
   printf(" \"%d\" is a amstrong no.",nn);
   else
   printf(" \"%d\" is not a amstrong no.",nn);
   return 0;
}
```

Output:-

```
Enter a no : 372

"372" is not a amstrong no.
```

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

Program:-

```
#include <stdio.h>
#include<math.h>
int main() {
   int n,i=2,c=0;
   printf("Enter the value for n:");
   scanf("%d",&n);
  do {
      if(n!=2&&n%i==0) {
         c=1;
         break;
      }
      ++i;
   } while(i<=sqrt(i));
   if(n==1) {
      printf("1 is Neither Prime Nor Composite,Its Natural No");
   }
   else
   {
      if(c==0)
         printf("%d is a Prime number",n);
      else
         printf("%d is not a Prime number",n);
   }
   return 0;
}
```

Output:-

```
Enter the value for n:5
5 is a Prime number
```

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

Program:-

```
#include <stdio.h>
int main() {
int no,rev=0,rem,c;
   printf("Enter no: ");
   scanf("%d",&no);
   c=no;
   do
   {
      if(no>0)
      rem=no%10;
      rev=rev*10+rem;
      no=no/10;
   }while(no>0);
   printf("Reverse of %d is %d",c,rev);

   return 0;
}
```

Output:-

```
Enter no: 123
Reverse of 123 is 321
```

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

Program:-

```
#include <stdio.h>
int main() {
   int no=9,i,t,sum=0;
   printf("Enter the no of terms : ");
   scanf("%d",&t);
   printf("The nos are : ");
   for(i=1;i<=t;i++)
   {
      sum=sum+no;
      printf("%d\t",no);
      no=no*10+9;
        }
   printf("\nThe sum is : %d ",sum);
   return 0;
}
```

Output:-

```
Enter the no of terms : 4
The nos are : 9  99       999     9999
The sum is : 11106
```

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

Program:-

```
#include<stdio.h>
int main()
{
   float x,sum,t,d;
   int n,i=1;
   printf("Enter the value of x: ");
   scanf("%f",&x);
   printf("Enter the no of terms: ");
   scanf("%d",&n);
   t=1;
   sum=1;
   while(i<=n)
      {
         d=(2*i)*(2*i-1);
         t=-t*x*x/d;
         sum=sum+t;
          i++;
         }
      printf("\nsum is=%f \n No of terms is =%f \n value of x is = %d",sum,n,x);
   return 0;
}
```

Output:-

```
Enter the value of x: 2
Enter the no of terms: 5

sum is=-0.416155
 No of terms is =2.000000
 value of x is = 5
```

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

Program:-

```
#include <stdio.h>
#include<math.h>
int main() {
  int x,sum,inc,i;
  int n,p,nn,m,d;
  printf("Enter value of x: ");
  scanf("%d",&x);
  printf("enter the no of terms: ");
  scanf("%d",&n);
  sum=x;
  i=1;
  m=-1;
  printf("The value of the series: ");
   printf("%d",x);
    do{
       //incrementing the power
     inc=(2*i+1);
     //power calculation
     p= pow(x,inc);
     //multiply into m
     nn=p*m;
          //printing the new nos
          printf("\n%d\n",nn);
      sum=sum+nn;
     m=m*(-1);
     i++;
  }while(i<n);
  printf("\nThe sum is : %d",sum);
      return 0;
}
```

Output:-

```
        Enter value of x: 2

   enter the no of terms: 5

   The value of the series: 2
```

-8

32

-128

512

The sum is : 410

OPTIONAL

16. display the n terms of even natural number and their sum.

Output:-

```
#include <stdio.h>
int main() {
   int no,i,sum=0,nn;
   printf("enter no of terms: ");
   scanf("%d",&no);
   printf("even natural nos are: \n");
   for(i=1;i<=no;i++)
   {
```

```
        nn=2*i;
        printf("%d\t",nn);
        sum=sum+nn;
           }
           printf("\nSum of the above no : %d",sum);
    return 0;
}
```

Program:-

```
enter no of terms: 10
even natural nos are:
2       4       6       8       10      12      14      16      18      20
Sum of the above no : 110
```

17. display n terms of natural number and their sum.

Program:-

```
#include <stdio.h>
int main() {
   int i,sum=0,no;
   printf("Enter terms of no: ");
   scanf("%d",&no);
    printf("The First %d Natural No's are \n",no);
   for(i=1;i<=no;i++){
      sum=sum+i ;
    printf("%d\t",i);
   }
   printf("\nSum of The First 10 Natural No is : %d ",sum);
   return 0;
}
```

Output:-

Enter terms of no: 10

The First 10 Natural No's are

1 2 3 4 5 6 7 8 9 10

Sum of The First 10 Natural No is : 55

18. display the pattern like a diamond.

Program:-

```
#include <stdio.h>
int main()
{
   int r,c,n;
   //r for row and c for column
   printf("Enter number of rows: ");
   scanf("%d",&n);
   for(r=1;r<=n;r++)
   {
      for(c=1;c<=n-r;c++)
         printf(" ");
      for(c=1;c<=2*r-1;c++)
         printf("*");
      printf("\n");
   }
   for(r=1;r<=n-1;r++)
   {
      for(c=1;c<=r;c++)
         printf(" ");
      for(c=1;c<=2*(n-r)-1;c++)
         printf("*");
      printf("\n");
   }
   return 0;
}
```

Output:-

```
Enter number of rows: 4
   *
  ***
 *****
*******
 *****
  ***
   *
```

19. display the pattern like right angle triangle with a number.

1
22
333
4444

Program:-

```
#include <stdio.h>
void main()
{
  int i,j,r;

  printf("enter no of rows : ");
  scanf("%d",&r);
  for(i=1;i<=r;i++)
  {
        for(j=1;j<=i;j++)
          printf("%d",i);
        printf("\n");
```

```
  }
}
```

Output:-

enter no of rows : 4

1

22

333

4444

20. calculate the factorial of a given number.

Program:-

```
#include<stdio.h>
int main()
{
   int no,i,f=1;
   printf("enter the no for factorial: ");
   scanf("%d",&no);
for(i=1;i<=no;i++)
{
   f=f*i;
   }
   printf("factorial of %d is %d .",no,f);
   return 0;
}
```

Output:-

enter the no for factorial: 5
factorial of 5 is 120 .

24. check whether a number is a palindrome or not.

Program:-

```
#include <stdio.h>
int main() {
int no,rev=0,rem,c;
   printf("Enter a no: ");
   scanf("%d",&no);
   c=no;
   do
   {
      if(no>0)
      rem=no%10;
      rev=rev*10+rem;
      no=no/10;
   }while(no>0);
   if (rev==c)
   printf("The No %d is palindrome.",c);
   else
   printf("The No %d is not palindrome",c);
      return 0;
}
```

Output:-

```
Enter a no: 131
The No 131 is palindrome.
```