Answer of Assignment 5– 14.01.2021

SUBJECT-PROGRAMMING AND DATA STRUCTURE USING C (PDSC)

LECTURE-M. Thangavel

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

Ans:-

```
#include <stdio.h>
void main()
{
   int  i, sum = 0;

   printf("The first 10 natural number is :\n");

   for (i = 1; i <= 10; i++)
   {
      sum = sum + i;
      printf("%d ",i);
   }
   printf("\nThe Sum is : %d\n", sum);
}
```

Output:-

```c

#include <stdio.h>
void main()
{
    int  i, sum = 0;

    printf("The first 10 natural number is :\n");

    for (i = 1; i <= 10; i++)
    {
        sum = sum + i;
        printf("%d ",i);
    }
    printf("\nThe Sum is : %d\n", sum);
}
```

```
The first 10 natural number is :
1 2 3 4 5 6 7 8 9 10
The Sum is : 55
```

2. display the multiplication table of a given integer.

Ans:-

```c
#include <stdio.h>
void main()
{
  int i,n;
  printf("Input the number:");
  scanf("%d",&n);
  printf("\n");
  i=1;
  while(i<=10)
  {
    printf("%d X %d = %d \n",n,i,n*i);
    i++;
  }
 }
```

Output:-

```
Input the number:89

89 X 1 = 89
89 X 2 = 178
89 X 3 = 267
89 X 4 = 356
89 X 5 = 445
89 X 6 = 534
89 X 7 = 623
89 X 8 = 712
89 X 9 = 801
89 X 10 = 890
```

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

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

Ans:-

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

Output:-

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

```
Input number of rows : 4
*
**
***
****
```

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

Ans:-

```
#include <stdio.h>
void main()
{
  int i=1,n,sum=0;
  printf("Input number of terms : ");
  scanf("%d",&n);
  printf("\nThe odd numbers are :");
  do
  {
   printf("%d ",2*i-1);
   sum+=2*i-1;
   i++;
  }
  while(i<=n);
  printf("\nThe Sum of odd Natural Number upto %d terms : %d \n",n,sum);
}
```

Output:-

```c
#include <stdio.h>
void main()
{
   int i=1,n,sum=0;

   printf("Input number of terms : ");
   scanf("%d",&n);
   printf("\nThe odd numbers are :");
   do
   {

     printf("%d ",2*i-1);
     sum+=2*i-1;
     i++;
   }
   while(i<=n);
   printf("\nThe Sum of odd Natural Number upto %d terms : %d \n",n,sum);
}
```

input

```
Input number of terms : 3

The odd numbers are :1 3 5
The Sum of odd Natural Number upto 3 terms : 9
```

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

1
2 3
4 5 6
7 8 9 10

Ans:-

```c
#include <stdio.h>

int main(){
int i=1,j=0,k=1;

while(i<=4){
   j=0;
   while(j<i){
     printf("%d ",k);
     k++;
     j++;
   }
 printf("\n");
 i++;
}
```

```
return 0;
}
```

Output:-

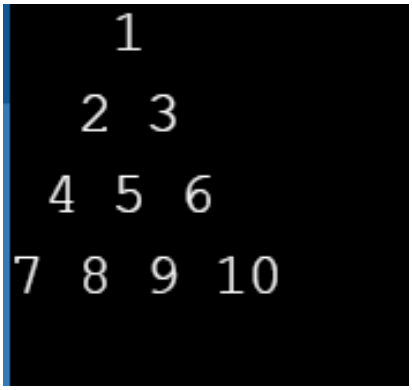
6. make such a pattern like a pyramid with numbers (Using do…while loop)

1
2 3
4 5 6
7 8 9 10

Ans:-

```
#include <stdio.h>
int main(){
int i=1,j=0,k=1,s=1;
do{
   s=i;
   j=0;
   while(s<=3){
      printf(" ");
      s++;
 }
   while(j<i){
     printf("%d ",k);
     k++;
     j++;
   }
  printf("\n");
  i++;
}while(i<=4);
return 0;
}
```

Output:-



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

Ans:-

```
#include <stdio.h>
int main()
{
int a = 0,b=1,sum =0,n,i;
printf("Enter a number :: ");
scanf("%d",&n);
printf("%d %d ",a,b);
for(i=0;i<n;i++){
   sum = a + b;
   printf("%d ",sum);
   a = b;
   b = sum;
}
  return 0;
}
```

Output:

```
 8
 9  #include <stdio.h>
10  int main()
11  {
12  int a = 0,b=1,sum =0,n,i;
13  printf("Enter a number :: ");
14  scanf("%d",&n);
15  printf("%d %d ",a,b);
16  for(i=0;i<n;i++){
17      sum = a + b;
18      printf("%d ",sum);
19      a = b;
20      b = sum;
21  }
22    return 0;
23  }
24
```

```
Enter a number :: 5
0 1 1 2 3 5 8
```

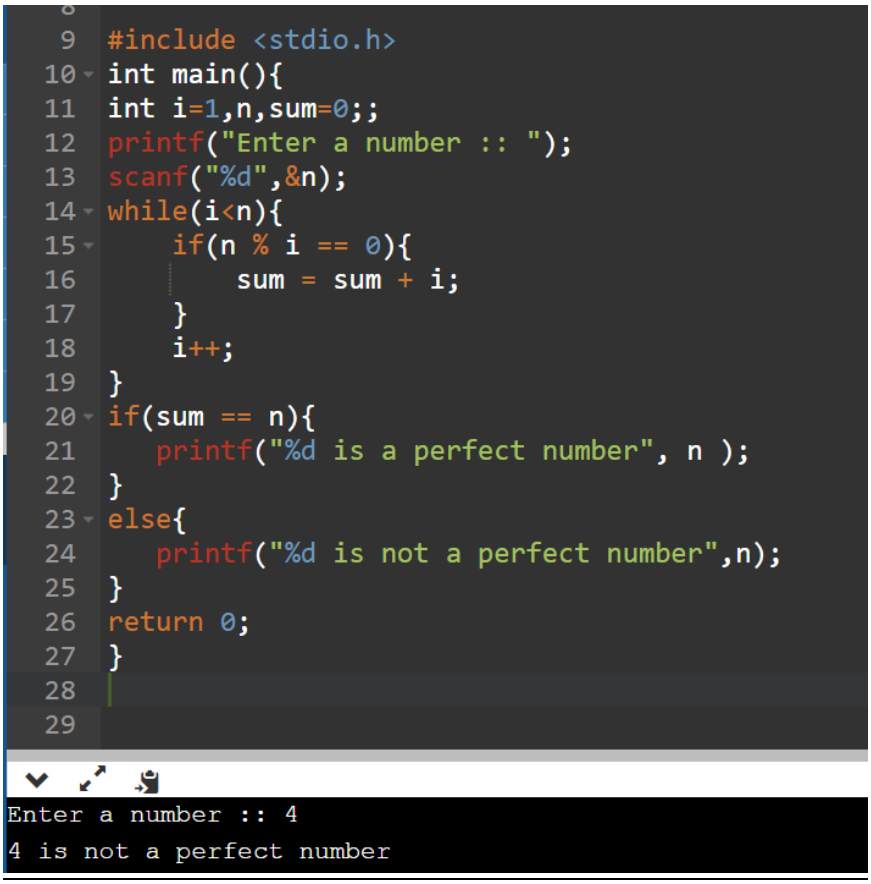
9. check whether a given number is a perfect number or not. (Using while loop).

Ans:-

```
#include <stdio.h>
int main(){
int i=1,n,sum=0;;
printf("Enter a number :: ");
scanf("%d",&n);
while(i<n){
   if(n % i == 0){
      sum = sum + i;
   }
   i++;
}
if(sum == n){
  printf("%d is a perfect number", n );
```

```
}
else{
   printf("%d is not a perfect number",n);
}
return 0;
}
```

Output:



```
#include <stdio.h>
int main(){
int i=1,n,sum=0;;
printf("Enter a number :: ");
scanf("%d",&n);
while(i<n){
    if(n % i == 0){
        sum = sum + i;
    }
    i++;
}
if(sum == n){
   printf("%d is a perfect number", n );
}
else{
   printf("%d is not a perfect number",n);
}
return 0;
}

Enter a number :: 4
4 is not a perfect number
```

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

Ans:-

```
#include <stdio.h>
int main(){
int n,n1,d,x,sum=0;
printf("Enter a number :: ");
scanf("%d",&n);
n1 = n ;
while(n > 0){
   d = n % 10;
   sum = sum + (d * d * d) ;
   n = n / 10;
}
if(sum == n1){
   printf("%d is a Armstrong number",n1);
}
else{
   printf("%d is not a Armstrong number",n1);
}
return 0;
}
```

Output:

```c
#include <stdio.h>
int main(){
int n,n1,d,x,sum=0;
printf("Enter a number :: ");
scanf("%d",&n);
n1 = n ;
while(n > 0){
    d = n % 10;
    sum = sum + (d * d * d) ;
    n = n / 10;
}
if(sum == n1){
    printf("%d is a Armstrong number",n1);
}
else{
    printf("%d is not a Armstrong number",n1);
}
return 0;
}
```

```
Enter a number :: 7
7 is not a Armstrong number
```

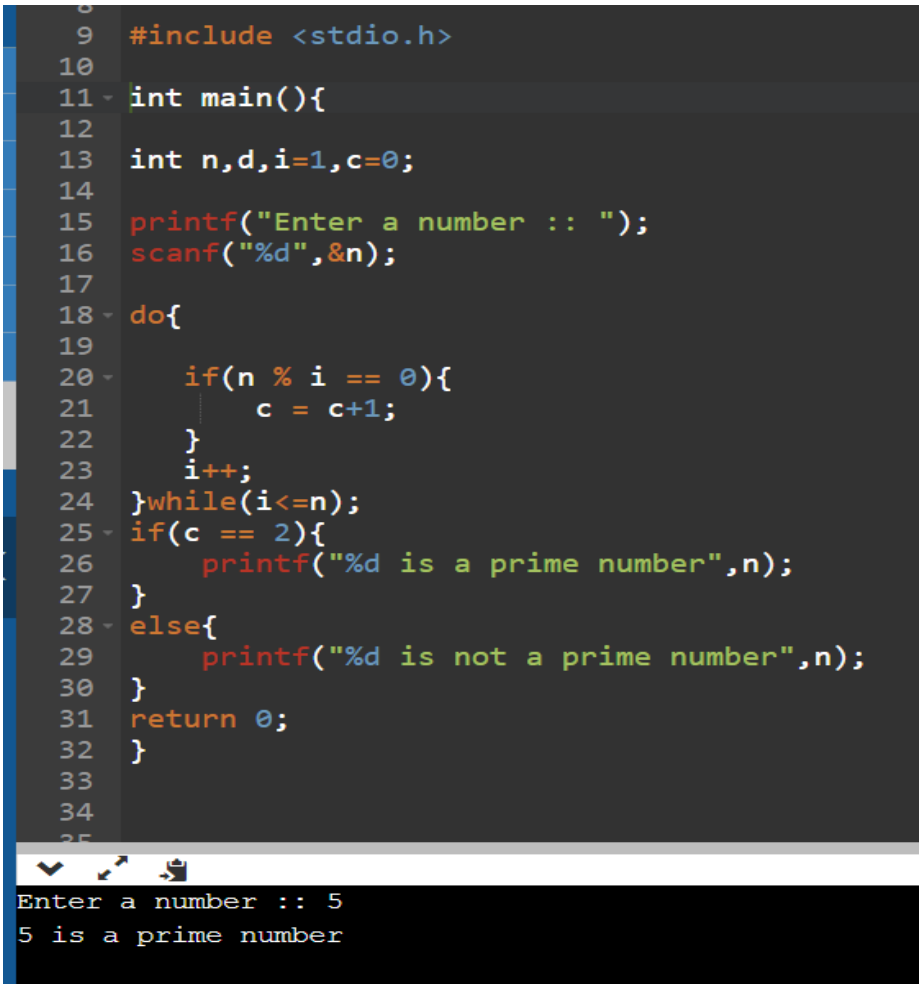
11. determine whether a given number is prime or not. (Using do…while loop).

Ans:-

```
#include <stdio.h>

int main(){

int n,d,i=1,c=0;

printf("Enter a number :: ");
scanf("%d",&n);

do{
```

```
  if(n % i == 0){
     c = c+1;
  }
  i++;
}while(i<=n);
if(c == 2){
   printf("%d is a prime number",n);
}
else{
   printf("%d is not a prime number",n);
}
return 0;
}
```

Output:-



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

Ans:-

```
#include <stdio.h>
int main(){
int n,d,i=1,c=0;
printf("Enter a number :: ");
scanf("%d",&n);
printf("Befor reverse the number is = %d \n",n);
printf("After reverse the number is = ");
do{
   d = n % 10;

  printf("%d",d);;

   n /= 10;
}
while(n>0);

return 0;
}
```

Output:

```c
#include <stdio.h>

int main(){

int n,d,i=1,c=0;

printf("Enter a number :: ");
scanf("%d",&n);
printf("Befor reverse the number is = %d \n",n);
printf("After reverse the number is = ");
do{
    d = n % 10;

    printf("%d",d);;

    n /= 10;
}while(n>0);

return 0;
}
```

```
Enter a number :: 457
Befor reverse the number is = 457
After reverse the number is = 754
```

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

Ans:-

```
#include <stdio.h>

int main(){
int i,n,j=9,sum=0;

printf("Enter a number :: ");
scanf("%d",&n);

for(i=0;i<n;i++){
  sum = j + sum;
  printf("%d  ",j);
  j = j * 10 + 9;

}

printf("= %d",sum);
return 0;
}
```

Output:

```c
#include <stdio.h>

int main(){
int i,n,j=9,sum=0;

printf("Enter a number :: ");
scanf("%d",&n);

for(i=0;i<n;i++){
  sum = j + sum;
  printf("%d  ",j);
  j = j * 10 + 9;

}
printf("= %d",sum);
return 0;
}
```

```
Enter a number :: 5
9  99  999  9999  99999  = 111105
```

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

Ans:-

```
#include <stdio.h>

int main(){
int i,n,j=1,s,a=1,b=1,sum=0;

printf("input series number :: ");
scanf("%d",&n);

printf("input a number :: ");
scanf("%d",&s);



for(i=0;i<n;i++){
    a = 1;

 for(j=1;j<=b;j++){

   a = a * s;

 }
        sum = sum + a;
        b = b + 2;

}
printf("sum of series is = %d",sum);
```

return 0;

}

Output:-

```
input series number :: 4
input a number :: 2
sum of series is = 170
```