Assignment—03

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PROBLEM-01 : Display all prime numbers between two Intervals.

Solve:

```
/*1. Display all prime numbers between two Intervals*/


#include<stdio.h>
#include<conio.h>
int main()
{
   int start,end;


   printf("Enter Starting Number : ");
   scanf("%d",&start);


   printf("Enter Ending Number : ");
   scanf("%d",&end);


   display(start,end);
   getch();
}
void display(int start,int end)
{
   int i,j,k=0;
```

```
    for(i=start; i<=end; i++)
    {
        for(j=1; j<=end; j++)
        {
            if(i%j==0)
            {
                k++;
            }
        }
        if(k==2)
        {
            printf("%d ",i);
        }
        k=0;
    }
    printf("is Prime Number.\n");
}
```

PROBLEM-02 : Check prime and Armstrong number by making functions.

Solve:

```
/*2. Check prime and Armstrong number by making functions*/

#include<stdio.h>
#include<conio.h>
#include<math.h>
int main()
```

```
{
   int num;

   printf("Enter any Integer Number : ");
   scanf("%d",&num);

   display(num);
   getch();
}
void display(int num)
{
   int i,j=0,k=0,sum=0,r,n1;

   for(i=1; i<=num; i++)
   {
      if(num%i== 0)
      {
         k++;
      }
   }

   if(k==2)
   {
      printf("\n%d is a Prime Number.\n",num);

   }
   else
   {
      printf("\n%d is NOT a Prime Number.\n",num);
```

```
}

n1=num;

while(num!=0)
{
   r = num%10;
   num = num/10;
   j++;
}

num=n1;

while(num!=0)
{
   r = num%10;
   sum = sum + pow(r,j);
   num = num/10;

}

if(sum==n1)
{
   printf("\n%d is an Armstrong Number.\n",n1);

}
else
{
   printf("\n%d is NOT an Armstrong Number.\n",n1);
```

```
    }

}
```

PROBLEM-03 : Check whether a number can be expressed as the sum of two prime numbers.

Solve:

```
/*3. Check whether a number can be expressed as the sum of   two prime numbers.*/
#include<stdio.h>
#include<conio.h>
int main()
{
   int num;

   printf("Enter any Integer Number :  ");
   scanf("%d",&num);

   display(num);
   getch();
}

void display(int num)
{
   int i,j,k=0,start=1,s;

   for(i=start; i<=num; i++)
   {
```

```
        for(j=1; j<=num; j++)
        {
           if(i%j==0)
           {
              k++;
           }
        }
        if(k==2)
        {
           s = num-i;
           k=0;
           for(j=1; j<=s; j++)
           {
              if(s%j==0)
              {
                 k++;
              }
           }
           if(k==2)
           {
              printf("\nYES,This Number is Expressed by \n");
              printf("\n%d + %d = %d\n",i,s,num);
           }
        }


        k=0;
     }
}
```

PROBLEM-04 : Find the sum of natural numbers using recursion.

Solve:

```
/*4. Find the sum of natural numbers using recursion.*/
#include<stdio.h>
#include<conio.h>
int main()
{
   int num;

   printf("Enter any Natural Number : ");
   scanf("%d",&num);

   int s = display(num);
   printf("\nThe Sum is : %d\n",s);
   getch();
}

int display(int num)
{
   if(num==1)
   {
      return 1;
   }
   else
   {
      return num + display(num-1);
   }
```

```
}
```

PROBLEM-05: Calculate the factorial of a number using recursion.

Solve:

```
/*5. Calculate the factorial of a number using recursion.*/


#include<stdio.h>
#include<conio.h>
int main()
{
   int num;


   printf("Enter any Integer Number :  ");
   scanf("%d",&num);


   int sum = display(num);
   printf("\nThe Factorial Value is : %d\n",sum);
   getch();
}


int display(int num)
{
   if(num==0)
   {
      return 1;
   }
   else
   {
      return num*display(num-1);
```

```
    }
}
```

PROBLEM-06: Find G.C.D using recursion.

Solve:

```
/*6. Find G.C.D using recursion.*/

#include<stdio.h>
#include<conio.h>
int main()
{
    int num1,num2;

    printf("Enter First Integer Number : ");
    scanf("%d",&num1);

    printf("Enter Second Integer Number : ");
    scanf("%d",&num2);

    int s = display(num1,num2);

    printf("\nThe G.C.D value is : %d\n",s);

    getch();
}

int display(int num1,int num2)
{
```

```
    int r;

    if(num1==0)
    {
       return num2;
    }
    if(num2==0)
    {
       return num1;
    }
    else
    {
      return display(num2,num1%num2);
    }
}
```

PROBLEM-07: 7. Reverse a sentence using recursion.

Solve:

```
/* 7. Reverse a sentence using recursion*/
#include<stdio.h>
#include<conio.h>
int main()
{

    printf("Enter a Sentence : ");

    sentence();
    getch();
```

```
}

void sentence()
{
   char c;
   scanf("%c",&c);
   if(c!='\0')
   {
      sentence();
      printf("%c",c);
   }
}
```

PROBLEM-08: Calculate the power of a number using recursion.

Solve:

```
/*8. Calculate the power of a number using recursion.*/

#include<stdio.h>
#include<conio.h>
int main()
{
   int base,exp;

   printf("Enter Base     :  ");
   scanf("%d",&base);
```

```
    printf("\nEnter Exponent :  ");
    scanf("%d",&exp);

    int result = display(base,exp);
    printf("\nThe Result is  : %d\n",result);
    getch();
}

int display(int base,int exp)
{
    if(exp==0)
    {
        return 1;
    }
    else if(exp==1)
    {
        return base;
    }
    else
    {
        return base*display(base,exp-1);
    }
}
```