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Section – CSE 37

DSA LAB 1

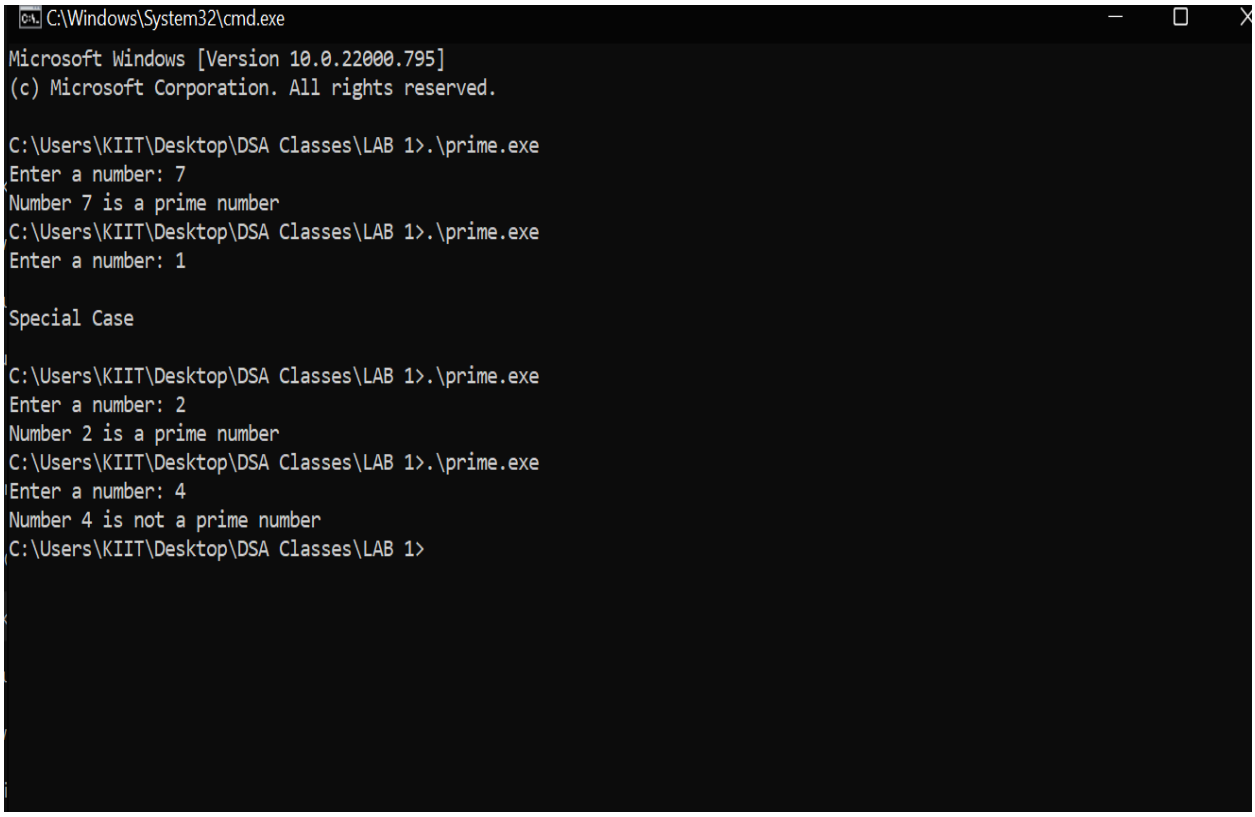
1. **WAP to test whether a number num (num is entered through keyboard) is a prime number or not.**

Input:

prime.c > main(void)

```c
#include <stdio.h>
int main (void)
{
  int num,i,count=0;
  printf("Enter a number: ");
  scanf("%d",&num);
  for(i=1;i<=num;i++)
  {
    if (num == 1 || num == 0)
    goto special;
    if(num%i==0)
    count++;
  }
  if (count==2)
  printf("Number %d is a prime number!",num);
  else
  printf("Number %d is not a prime number!",num);

  return 0;

  special:
  printf("\nSpecial Case!\n");
}
```

Output:

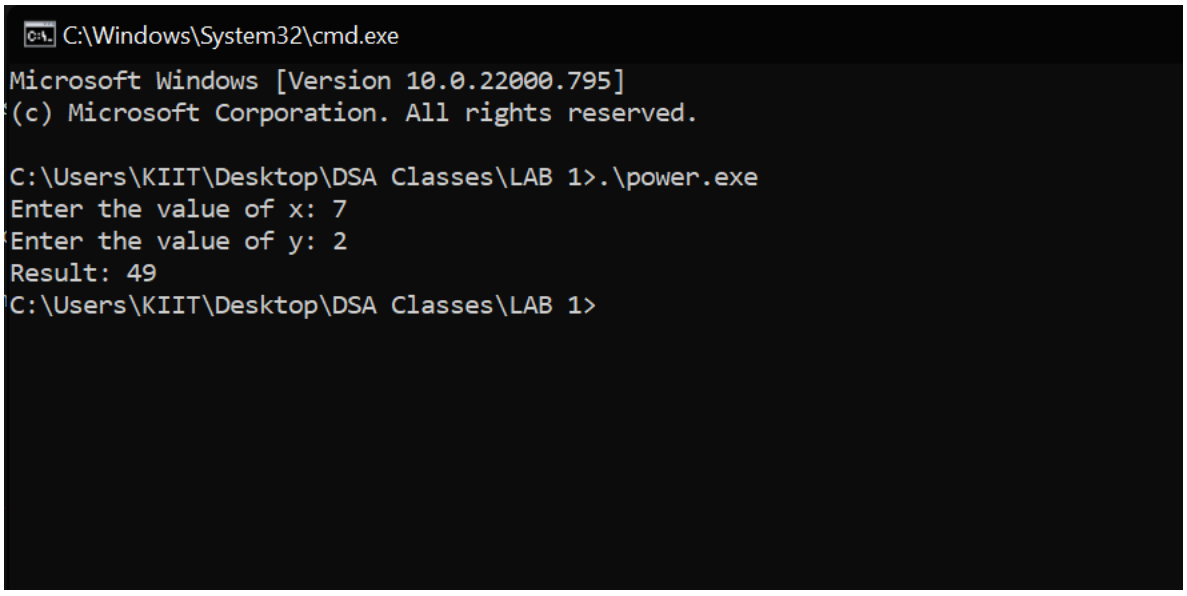

C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22000.795]
(c) Microsoft Corporation. All rights reserved.
C:\Users\KIIT\Desktop\DSA Classes\LAB 1>.\prime.exe
Enter a number: 7
Number 7 is a prime number
C:\Users\KIIT\Desktop\DSA Classes\LAB 1>.\prime.exe
Enter a number: 1
Special Case
C:\Users\KIIT\Desktop\DSA Classes\LAB 1>.\prime.exe
Enter a number: 2
Number 2 is a prime number
C:\Users\KIIT\Desktop\DSA Classes\LAB 1>.\prime.exe
Enter a number: 4
Number 4 is not a prime number
C:\Users\KIIT\Desktop\DSA Classes\LAB 1>

2. **WAP to calculate x^y using function.**

Input:

```c
#include <stdio.h>
#include <math.h>
int main (void)
{
  int x,y,c;
  printf("Enter the value of x: ");
  scanf("%d",&x);
  fflush(stdin);
  printf("Enter the value of y: ");
  scanf("%d",&y);
  c = power(x,y);
  printf("Result: %d",c);
return 0;
}
int power(int x,int y)
{
  int result=1;
  while(y!=0)
  {
   result =result*x;
    y--;
  }
    return result;
}
```

Output:



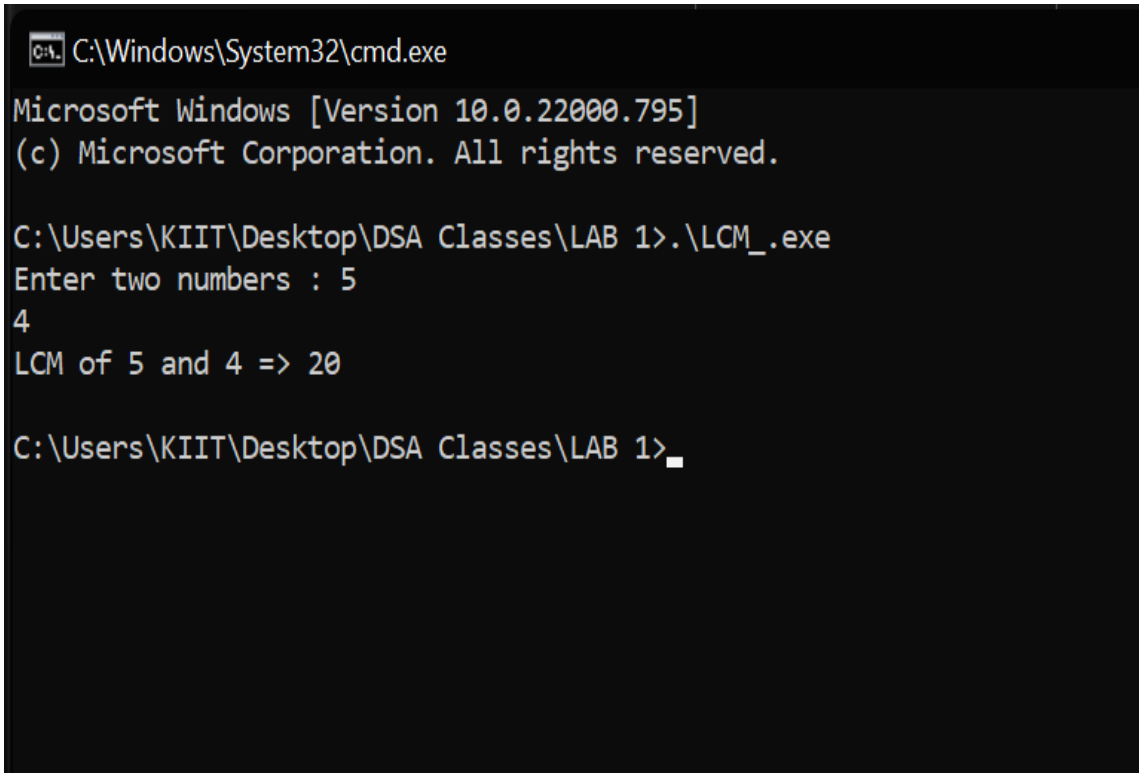
3. **WAP to find the LCM of two numbers a and b by using a suitable function (say LCM) for this.**

Input:

LCM_.c > main(void)

```c
#include <stdio.h>
int main (void)
{
    int x,y,a,b;
    printf("Enter two numbers : ");
    scanf("%d%d",&x,&y);
    a=x;b=y;
    while (a!=b)
        {
            if (a<b)
            a=a+x;
            else
            b=b+y;
        }
        printf("LCM of %d and %d => %d\n",x,y,a);
}
```

Output:


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22000.795]
(c) Microsoft Corporation. All rights reserved.
C:\Users\KIIT\Desktop\DSA Classes\LAB 1>.\LCM_.exe
Enter two numbers : 5
4
LCM of 5 and 4 => 20
C:\Users\KIIT\Desktop\DSA Classes\LAB 1>

4. **WAP to perform the add, sub, mul, & div operations based on functions.**

Input:

arithmatics.c > main(void)

```c
#include <stdio.h>

int add();
int sub();
int mul();
int div();
int main (void)
{
  int a,b;
  printf("Enter the value of a: ");
  scanf ("%d",&a);
  fflush(stdin);
  printf("Enter the value of b: ");
  scanf ("%d",&b);
  int p=add(a,b);
  printf("Addition : %d\n",p);
  int q=sub(a,b);
  printf("Subtraction : %d\n",q);
  int s=mul(a,b);
  printf("Multiplication : %d\n",s);
  int t=div(a,b);
  printf("Division : %d\n",t);
return 0;
}
```

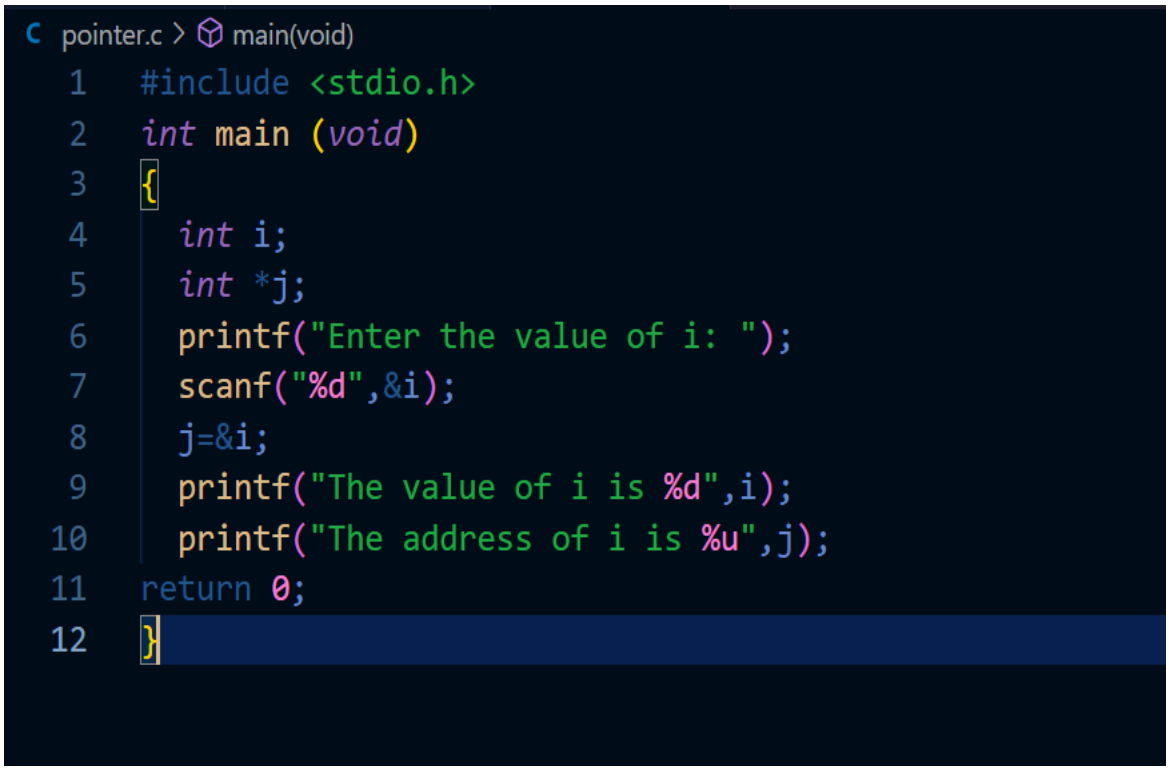
```
    printf("Division : %d\n",t);
return 0;
}
int add(int x,int y)
{
    int result = x+y;
    return result;
}
int sub(int x,int y)
{
    int result = x-y;
    return result;
}
int mul(int x,int y)
{
    int result = x*y;
    return result;
}
int div(int x,int y)
{
    int result = x/y;
    return result;
}
```

Output:

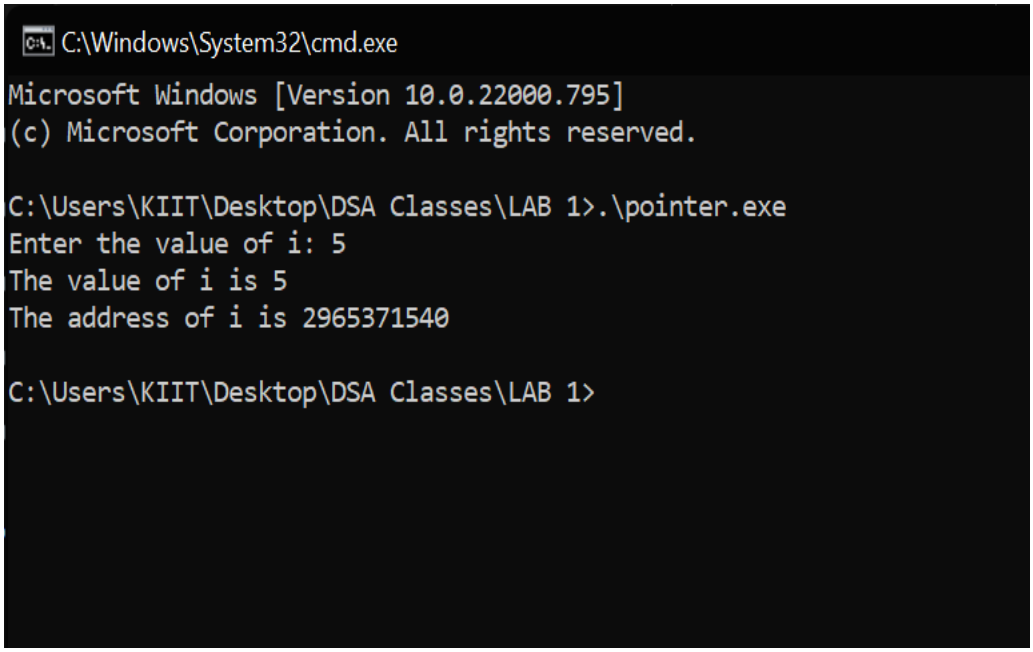
```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22000.795]
(c) Microsoft Corporation. All rights reserved.

C:\Users\KIIT\Desktop\DSA Classes\LAB 1>.\arithmatics.exe
Enter the first number: 7
Enter the second number: 3
Addition : 10
Subtraction : 4
Multiplication : 21
Division : 2

C:\Users\KIIT\Desktop\DSA Classes\LAB 1>
```

5. **WAP to create, initialize, assign and access a pointer variable.**

Input:



Output:



6. **WAP to add two numbers using pointers.**

Input:

```c
#include <stdio.h>
int main (void)
{
  int a,b,c;
  int *x=&a,*y=&b;
  printf("Enter the value of a: ");
  scanf("%d",&a);
  fflush(stdin);
  printf("Enter the value of b: ");
  scanf("%d",&b);
  c=*x+*y;
  printf("The addition: %d",c);
return 0;
}
```

Output:

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22000.795]
(c) Microsoft Corporation. All rights reserved.

C:\Users\KIIT\Desktop\DSA Classes\LAB 1>.\add_pointer.exe
Enter the value of a: 6
Enter the value of b: 4
The addition: 10
C:\Users\KIIT\Desktop\DSA Classes\LAB 1>
```

7. **WAP to swap two numbers using call by reference.**

Input:

```c
#include <stdio.h>
swap();
int main (void){
  int a,b,c;
  printf("Enter the value of a: ");
  scanf("%d",&a);
  fflush(stdin);
  printf("Enter the value of b: ");
  scanf("%d",&b);
  printf("The value of a & b = %d & %d \n",a,b);
  swap(&a,&b);
  printf("\nAfter Swapping\n");
  printf("The value of a & b = %d & %d \n",a,b);
  return 0;
}
swap (int *x,int *y)
{
  int temp = *x;
  *x = *y;
  *y = temp;
}
```

Output: