IT161: Introduction to Programming and Problem Solving

Lab 2/Assignment 2

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PROGRAMS

1. Printing special characters

Code:

```
#include <stdio.h>
int main(){
   printf("Special Characters 1 -->  ");
   for(int i = 32; i <= 47;i++){
      printf("  %c",i);
   }
   printf("\n");
   printf("Special Characters 2 -->  ");
   for(int i = 58; i <= 64;i++){
      printf("  %c",i);
   }
   printf("\n");
   printf("Special Characters 3 -->  ");
   for(int i = 91; i <= 96;i++){
      printf("  %c",i);
   }
   printf("\n");
```

```
    printf("Special Characters 4 -->  ");
    for(int i = 123; i <= 126;i++){
       printf("  %c",i);
    }
    printf("\n");
       return 0;}
```

Output:

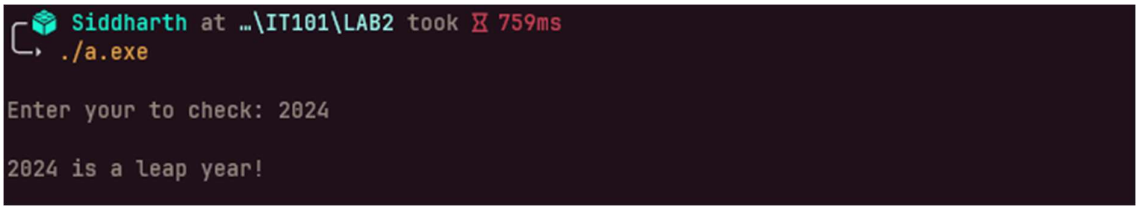
2. C Program to Check Leap Year

Code:

```
#include <stdio.h>

int main(){

   int year;

   printf("\nEnter your to check: ");
   scanf("%d",&year);

   if(year%4 == 0){
      printf("\n%d is a leap year!\n",year);
   }
```

```
    else if(year% 100 == 0 && year % 400 == 0){
        printf("\n%d is a leap year!\n",year);
    }
    else {
        printf("\n%d is not a leap year!\n",year);
    }
    return 0;
}
```

Output:



3. C Program to Find the Factorial

Code:

```
#include <stdio.h>
int main(){
    int n;
    int fact = 1;
    printf("\nEnter your Number: ");
    scanf("%d",&n);
    for(int i = 1; i <= n;i++){
        fact = fact * i;}

    printf("\nThe factorial of %d is %d\n",n,fact);

    return 0;}
```

Output:

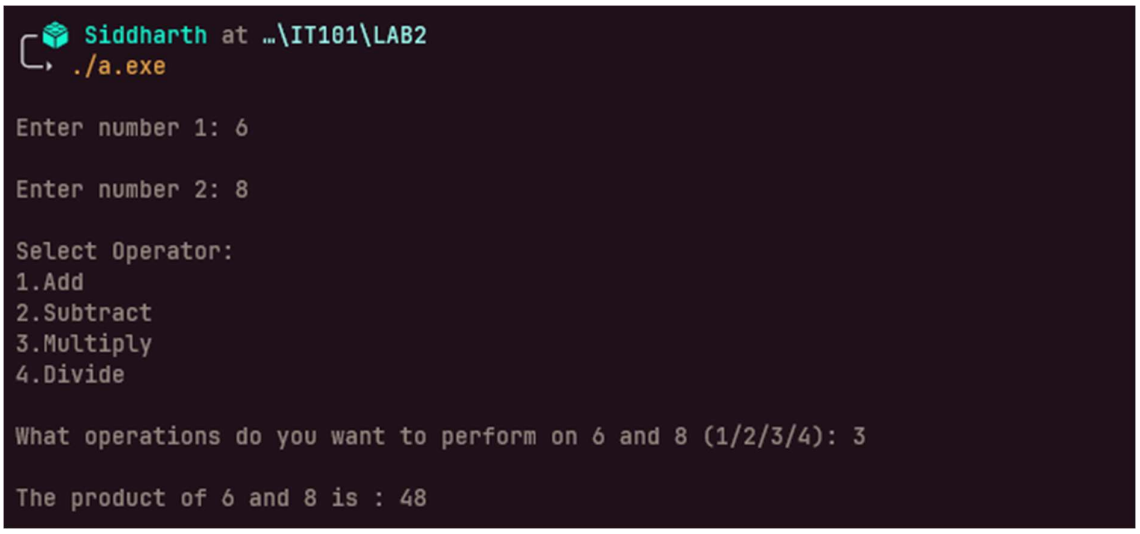
4. C Program to Make a Simple Calculator

Code:

```
#include <stdio.h>
#include <stdlib.h>

int main(){

   int operation;
   int a;
   int b;

   printf("\nEnter number 1: ");
   scanf("%d",&a);

   printf("\nEnter number 2: ");
   scanf("%d",&b);

   printf("\nSelect Operator: \n");
   printf("1.Add\n");
   printf("2.Subtract\n");
   printf("3.Multiply\n");
   printf("4.Divide\n");
   printf("\nWhat operations do you want to perform on %d and %d (1/2/3/4): ",a,b);
```

```
    scanf("%d",&operation);


    if(operation == 1){
        printf("\nThe sum of %d and %d is : %d\n",a,b,a+b);
    }
    else if(operation == 2){
        printf("\nThe diff of %d and %d is : %d\n",a,b,abs(a-b));
    }
    else if(operation == 3){
        printf("\nThe product of %d and %d is : %d\n",a,b,a*b);
    }
    else if(operation == 4){
        printf("\nThe Division of %d and %d is : %.2f\n",a,b,(float)a/(float)b);
    }


    return 0;
}
```

Output:

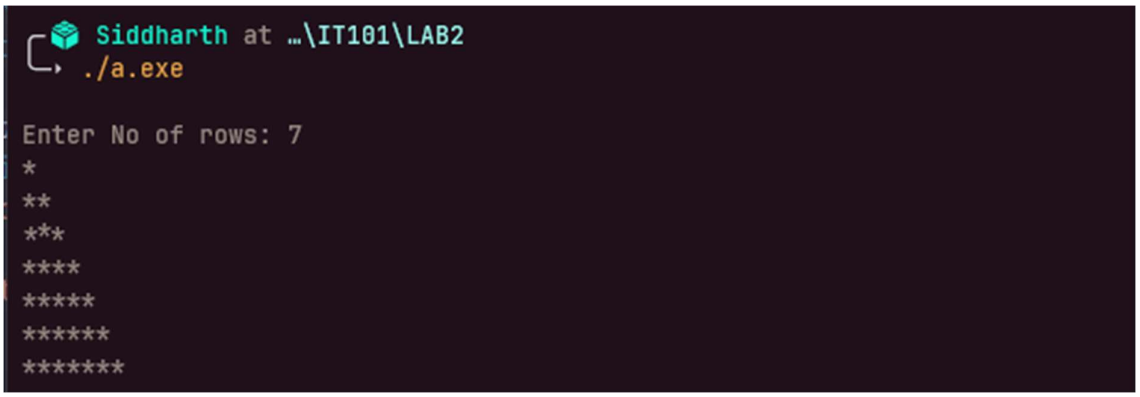


5. C Program to Print Pyramid Pattern

Code:

```
#include <stdio.h>


int main(){


   int n;


   printf("\nEnter No of rows: ");
   scanf("%d",&n);


   for(int i=1; i<=n ; i++){
      for(int j = 1; j <= i;j++){
         printf("*");
      }
      printf("\n");
   }


   return 0;
}
```

Output:

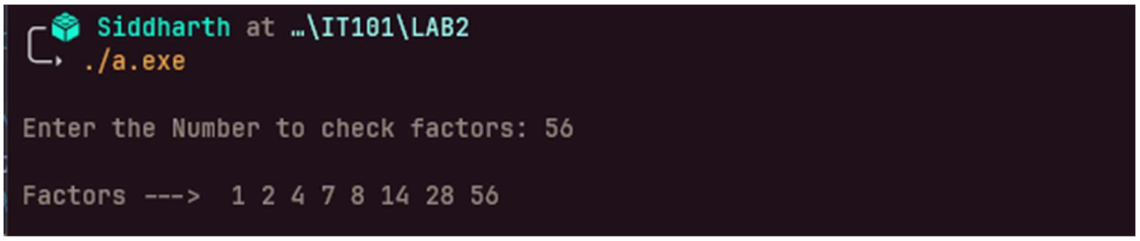


6. C Program to Display Factors of a Number

Code:

```
#include <stdio.h>


int main(){


   int n;
   printf("\nEnter the Number to check factors: ");
   scanf("%d",&n);


   printf("\nFactors ---> ");
   for(int i = 1 ; i <= n ; i++){
      if(n%i==0){
      printf(" %d",i);
      }
   }
   printf("\n");


   return 0;
}
```

Output:



7. Store integers in an array

Code:

```
#include <stdio.h>


int main(){


   int n;
   printf("\n how many numbers do you want to enter: ");
   scanf("%d",&n);
   int array[n];
   for(int i; i < n ; i++)
      printf("\nEnter the %dth Number:  ",i+1);
      scanf("%d",&array[i]);
   }
   printf("\nhere is your Final Array --> \n")
   for(int j; j<n ; j++){
   printf(" %d",array[j]);
   }
   printf("\n");
   return 0;
}
```

Output:

```
Siddharth at …\IT101\LAB2 took 1s
./a.exe

 how many numbers do you want to enter: 3

Enter the 1th Number:  1

Enter the 2th Number:  2

Enter the 3th Number:  3

here is your Final Array ⟶
 1 2 3
```

8. Finding min, max from integer array

Code:

```
#include <stdio.h>

int main(){

   int array[] = {2,6,4,9,10,99,0};

   int great = array[0];

   int least = array[0];

   int len = sizeof(array)/sizeof(array[0]);

   for(int i = 1; i<= len ; i++){

      if (array[i] > great){

         great = array[i];

      }

   }

   for(int i =0 ; i< len ; i++){

      if (array[i] < least){

         least = array[i];

      }

   }

   printf("\ngreatest no --->%d\n",great);

   printf("\nsmallest no --->%d\n",least);


   return 0;

}
```

Output:

```
Siddharth at …\IT101\LAB2
./a.exe

greatest no --->99

smallest no --->0
```

9. Checking whether an array is in ascending or descending

Code:

```
#include <stdio.h>

int main()
   int array[] = {10,9,7,4,2,1,0};
   int is_asc = 0;
   int is_dsc = 0;
   int len = sizeof(array)/sizeof(array[0]);
   for(int i = 0; i< len ; i++){
      if (array[i] < array[i+1]){
         is_asc += 1;
      }
      else if (array[i] > array[i+1]){
         is_dsc += 1;
      } }
   if(is_asc == len-1){
      printf("\nThe Array is in ascending order!\n");
   }
   else if(is_dsc == len-1){
      printf("\nThe Array is in desecnding order!\n");
   }
   else{
      printf("\nArray Not sorted!\n");
      }
   return 0; }
```

Output:

10.Reverse the entries of an integer array

Code:

```
#include <stdio.h>


int main(){


   int array[] = {3,6,4,9,10,98,54,77,22};
   int len = sizeof(array)/sizeof(array[0]);
   int reversed[len];


   for(int i = 0; i < len; i++){


      reversed[i] = array[len-1-i];
   }
   int len_reversed = sizeof(reversed)/sizeof(reversed[0]);


   printf("\nhere is your Reversed Array --> \n");


   for(int j = 0; j < len_reversed; j++){
      printf(" %d",reversed[j]);
   }
   printf("\n");
   return 0;
}
```

Output: