Institute of Computer Technology

B. Tech. Computer Science and Engineering

Sub: DS

Course Code: 2CSE302

Practical – 2

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Sem - 3

Branch: CS

Class: A

Batch: 32

Problem Definition-1:

Write a program that asks the user to enter two numbers, obtains them from the user and prints their sum, product, difference, quotient and remainder.

Code:

```c
#include <stdio.h>

int main() {
    int num1, num2;

    printf("Enter the first number: ");
    scanf("%d", &num1);

    printf("Enter the second number: ");
    scanf("%d", &num2);

    int sum = num1 + num2;
    int product = num1 * num2;
    int difference = num1 - num2;
    int quotient = num1 / num2;
    int remainder = num1 % num2;

    printf("Sum: %d\n", sum);
```

```
    printf("Product: %d\n", product);
    printf("Difference: %d\n", difference);
    printf("Quotient: %d\n", quotient);
    printf("Remainder: %d\n", remainder);

    return 0;
}
```

Output –

```
PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-2\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output> & .\'q1.exe'
Enter the first number: 23
Enter the second number: 22
Sum: 45
Product: 506
Difference: 1
Quotient: 1
Remainder: 1
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output>
```

Problem Definition-2:

Suppose, a user enters the total selling price of 15 items and the profit earned on the total. Write a program to find out the cost price of one item.

Code:

```
#include <stdio.h>

int main() {
    float totalSellingPrice, profit, costPrice;

    printf("Enter the total selling price of 15 items: ");
    scanf("%f", &totalSellingPrice);

    printf("Enter the profit earned on the total: ");
    scanf("%f", &profit);

    costPrice = (totalSellingPrice - profit) / 15;

    printf("Cost price of one item: %.2f\n", costPrice);

    return 0;
}
```

Output-

```
Run and Debug (Ctrl+Shift+D)
PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-2\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output> & .\'q2.exe'
Enter the total selling price of 15 items: 20000
Enter the profit earned on the total: 6900
Cost price of one item: 873.33
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output>
```

Problem Definition-3: Separating Digits in an Integer Write a program that inputs one five-digit number, separates the number into its individual digits and prints the digits separated from one another by three spaces each.

Code:

```c
#include<stdio.h>
int main(){
    int a,b,c,d,e,f;
    printf("Enter A 5 Digit Number - ");
    scanf("%d",&a);
    f = a / 10000;
    b = a / 1000 % 10;
    c = a / 100 % 10;
    d = a / 10 % 10;
    e = a % 10;
    printf("%d %d %d %d %d ",f,b,c,d,e);
    return 0;
}
```

Output-

```
PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-2\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output> & .\'q3.exe'
Enter A 5 Digit Number - 42139
4 2 1 3 9
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output>
```

Problem Definition-4: Write a program that prints the following shapes with asterisks.

Code:

```c
#include<stdio.h>
int main(){
    int size = 7,i,j;
    for ( i = 0; i < size; i++){
        for ( j = 0; j < size; j++){
```

```
            if (i == 0 || i == size - 1){
                printf("*");
            }
            else{
                if (j == 0 || j == size - 1){
                    printf("*");
                }
                else{
                    printf(" ");
                }
            }
        }
        printf("\n");
    }
}
```

Output –

```
PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-2\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output> & .\'q4-1.exe'
*******
*     *
*     *
*     *
*     *
*     *
*******
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output>
```

Code:

```
#include<stdio.h>
int main(){
    int size = 5,i,j,k;
    for ( i = 1; i <= size; i++){
        for ( j = size; j > i; j--){
            printf(" ");
        }
        for ( k = 0; k < i * 2 - 1; k++){
            if (k == 0 || k == 2 * i - 2){
                printf("*");
            }
            else{
                printf(" ");
            }
        }
        printf("\n");
    }
    for ( i = 1; i < size; i++){
        for ( j = 0; j < i; j++){
```

```
            printf(" ");
        }
        for ( k = (size - i) * 2 - 1; k >= 1; k--){
            if (k == 1 || k == (size - i) * 2 - 1){
               printf("*");
            }
            else{
                printf(" ");
            }
        }
        printf("\n");
    }
}
```

Output-

```
PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-2\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output> & .\'q4-2.exe'
    *
   * *
  *   *
 *     *
*       *
 *     *
  *   *
   * *
    *
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output>
```

Code:

```
#include<stdio.h>
int main(){
    int i,j;
    for (i=1 ; i<=5 ; i++){
        for (j=0 ; j<i ; j++){
            printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

Output –

```
PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-2\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output> & .\'q4-3.exe'
*
**
***
****
*****
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output>
```

Problem Definition-5: Diameter, Circumference and Area of a Circle Write a program that reads in the radius of a circle and prints the circle's diameter, circumference and area. Use the constant value 3.14159 for π.

Code:

```c
#include <stdio.h>

int main() {
    float radius, diameter, circumference, area;
    const float pi = 3.14159;

    printf("Enter the radius of the circle: ");
    scanf("%f", &radius);

    diameter = 2 * radius;
    circumference = 2 * pi * radius;
    area = pi * radius * radius;

    printf("Diameter: %.2f\n", diameter);
    printf("Circumference: %.2f\n", circumference);
    printf("Area: %.2f\n", area);

    return 0;
}
```

Output-

```
PS C:\ICT\SEM-3\DS\Practical> cd 'c:\ICT\SEM-3\DS\Practical\Practical-2\output'
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output> & .\'q5.exe'
Enter the radius of the circle: 23
Diameter: 46.00
Circumference: 144.51
Area: 1661.90
PS C:\ICT\SEM-3\DS\Practical\Practical-2\output>
```