

Practical Number	03
Areas covered	Operators , if conditions

Question 01

```
#include<Stdio.h>
int main()
{
int n1,n2;
printf("Enter first number");
scanf("%d",&n1);
printf("Enter second number");
scanf("%d",&n2);
if (n1<n2)
    printf("%d is greater than %d",n2,n1);
else if
    (n1>n2)
    printf("%d is greater than %d",n1,n2);
else
    printf("%d and %d are equal",n1,n2);
}
```

Question 02

```
#include<stdio.h>
int main()
{
int n1,n2,n3;
printf("Enter first number");
scanf("%d",&n1);
printf("Enter second number");
scanf("%d",&n2);
printf("Enter third number");
scanf("%d",&n3);
if (n1>n2 && n1>n3)
    printf("%d is the greatest number\n",n1);
else if (n2>n1 && n2>n3)
    printf("%d is the greatest number\n",n2);
else
```

```

printf("%d is the greatest number\n",n3);

if (n1<n2 && n1<n3)
printf("%d is the lowest number\n",n1);
else if (n2<n1 && n2<n3)
printf("%d is the lowest number\n",n2);
else if (n3<n1 && n3<n2)
printf("%d is the lowest number\n",n3);
}

```

Question 03

```

#include<stdio.h>
int main()
{
float bs,ns;
char name[15];

printf("Enter your name :");
scanf("%s",&name);
printf("Enter your basic salary :");
scanf("%f",&bs);
if (bs<=5000)
    ns=bs+bs*.05;
else if (bs<=10000)
    ns=bs+bs*.1;
else
    ns=bs+bs*.15;
printf("%s your new salay is %f",name,ns);
}

```

Question 04

```
#include<stdio.h>
int main()
{
    float d,c,a,r;
    float pi=3.14159;
    printf("Enter radius length :");
    scanf("%f",&r);
    printf("Diameter=%f\n",d=r*2);
    printf("Circumference=%f\n",c=2*pi*r);
    printf("Area=%f\n",a=pi*r*r);
}
```

Question 05

```
#include<stdio.h>
int main()
{
    int n1,n2;
    printf("Enter 1st number");
    scanf("%d",&n1);
    printf("Enter 2nd number");
    scanf("%d",&n2);
    if (n1%n2==0 && n1>n2)
        printf("%d is a multiple of %d",n1,n2);
    else if (n1%n2==0 && n1<n2)
        printf("%d is a multiple of %d",n2,n1);
    else if (n2%n1==0 && n2>n1)
        printf("%d is a multiple of %d",n2,n1);
    else if (n2%n1==0 && n1>n2)
        printf("%d is a multiple of %d",n1,n2);
    else printf("%d and %d are not multiples of each other",n1,n2,);
}
```

Question 06

```
#include <stdlib.h>
int main()
{
    char data;
    printf("%d%d%d%d\n", 'a', 'A', 'z', 'Z');
    printf("%d%d\n", '0', '9');
    printf("%d%d%d%d%d \n", '$', '*', '+', '/', ');

    //check whether its a what kind of character

    printf("Enter your character ");
    scanf("%c",&data);

    int dataInt=(int)data;

    if (dataInt>=97 && dataInt<=122)
    {
        printf("you entered a lowercase letter\n");
    }
    else if(dataInt>=65 && dataInt<=90)
    {
        printf("you entered a uppercase letter\n");
    }
    else if(dataInt>=49 && dataInt<=57)
    {
        printf("you entered a number\n");
    }
    else if(dataInt==32)
    {
        printf("you entered a blank space\n");
    }
    else
    {
        printf("you entered a special character ");
    }
}
```

Question 07

```
#include<stdio.h>
int main()
{
    float bs,ts,fs,es;
    char c;
    int m;

    printf("Enter your basic salary\n");
    scanf("%f",&bs);
    if (bs>=50000)
        ts=bs+bs*.15;
    else if (bs<25000)
        ts=bs+bs*.12;
    else
        ts=bs+bs*.1;

    printf("Enter your number of service years\n");
    scanf("%d",&m);
    if (m>=5)
        es=ts+bs*.1;
    else
        es=ts;

    printf ("Enter C if you live in colombo,otherwise enter n \n");
    scanf(" %c",&c);
    if (c=='c')
        fs=es+bs*0.10;
    else
        fs=es;
    printf("Your final salary is %f",fs);
}
```

Practical Number	04
Areas covered	Selection control structures

Question 01

```
#include <stdio.h>
int main()
{
    int no;

    printf("Enter a Number ");
    scanf("%d", &no);

    if(no%2==1)
        printf("Odd Number");
    else
        printf("Even Number");

    return 0;
}
```

Re-Write the above program using a switch statement instead of an If-Else statement

```
#include <stdio.h>
int main()
{
    int no;

    printf("Ennter a Number ");
    scanf("%d", &no);

    switch(no%2)
    {
        case 0:printf("Even Number");break;
        case 1:printf("Odd Number");break;

        default:printf("Invalid Input");
    }

    return 0;
}
```

Question 02

```
#include <stdio.h>
int main()
{
    int choice;
    float no1,no2,result;

    printf("Simple Menu Driven Calculator \n");
    printf("1. Addition \n");
    printf("2. Substraction \n");
    printf("3. Multipication \n");
    printf("4. Division \n");
    printf("Enter Your Choice [1-4]: \n");
    scanf("%d", &choice);

    printf("Enter First Number ");
    scanf("%f", &no1);
    printf("Enter Second Number ");
    scanf("%f", &no2);

    switch(choice)
    {
        case 1:
            result=no1+no2;
            printf("%.2f \n", result);
            break;

        case 2:
            result=no1-no2;
            printf("%.2f \n", result);
            break;

        case 3:
            result=no1*no2;
            printf("%.2f \n", result);
            break;

        case 4:
            if(no2 != 0)
            {
                result=no1/no2;
```

```

        printf("%.2f \n", result);
    }
    else
    {
        printf("Can Not Be Devided \n");
    }
    break;

default:
    printf("Invalid Choice \n");
    break;

}

return 0;
}

```

Question 03

```

#include <stdio.h>
int main()
{
    int choice;
    double radius, circumference, area, volume;

    printf("Menu. \n");
    printf("1. Calculate Circumference of a Circle \n");
    printf("2. Calculate area of a Circle \n");
    printf("3. Calculate volume of a sphere \n");
    printf("Enter Your Choice [1-3]: ");
    scanf("%d", &choice);

    switch(choice)
    {
        case 1:
            printf("Enter the radius of the circle: ");
            scanf("%lf", &radius);
            circumference= 2 * 3.1415 * radius;
            printf("Circumference of the circle: %.2lf \n", circumference);
            break;

        case 2:

```



```

        printf("Enter the radius of the circle: ");
        scanf("%lf", &radius);
        area= 3.1415 * pow(radius, 2);
        printf("Area of the circle: %2lf \n", area);
        break;

    case 3:
        printf("Enter the radius of the sphere: ");
        scanf("%2lf", &radius);
        volume=(4.0/3.0) * 3.1415 * radius * radius * radius;
        printf("Volume of the sphere: %2lf \n", volume);
        break;

    default:
        printf("Invalid Choice\n");
        break;
}

return 0;
}

```

Question 04

```

#include <stdio.h>
int main()
{
    char letter;

    printf("Enter a character: ");
    scanf("%c", &letter);

    switch(letter)
    {
        case 'a':
            printf("Vowel Character");
            break;

        case 'A':
            printf("Vowel Character");
            break;
    }
}

```

```
case 'e':
    printf("Vowel Character");
break;

case 'E':
    printf("Vowel Character");
break;

case 'i':
    printf("Vowel Character");
break;

case 'I':
    printf("Vowel Character");
break;

case 'o':
    printf("Vowel Character");
break;

case 'O':
    printf("Vowel Character");
break;

case 'u':
    printf("Vowel Character");
break;

case 'U':
    printf("Vowel Character");
break;

default:
    printf("Not a Vowel Character");
break;

}

return 0;
}
```

Question 05

```
#include <stdio.h>
int main()
{
    int monthno;

    printf("Enter a Month Number [1-12]: ");
    scanf("%d", &monthno);

    switch(monthno)
    {
case 1:
        printf("Month: January \n");
        printf("31 Days");
        break;

case 2:
        printf("Month: February \n");
        printf("28 Days");
        break;

case 3:
        printf("Month: March \n");
        printf("31 Days");
        break;

case 4:
        printf("Month: April \n");
        printf("30 Days");
        break;

case 5:
        printf("Month: May \n");
        printf("31 Days");
        break;

case 6:
        printf("Month: June \n");
        printf("30 Days");
        break;

case 7:
```

```
    printf("Month: July \n");
    printf("31 Days");
break;

case 8:
    printf("Month: August \n");
    printf("30 Days");
break;

case 9:
    printf("Month: September \n");
    printf("31 Days");
break;

case 10:
    printf("Month: October \n");
    printf("30 Days");
break;

case 11:
    printf("Month: November \n");
    printf("31 Days");
break;

case 12:
    printf("Month: December \n");
    printf("30 Days");
break;

default:
    printf("Invalid Month \n");
break;

}

return 0;
}
```

Practical Number	05
Areas covered	Iteration control structure

Question 01

- While

```
#include<stdio.h>
int main()
{
    int number = 0;

    while (number <= 100) {
        printf("%d ", number);
        number++;
    }
    return 0;
}
```

- Do while

```
#include<stdio.h>
int main()
{
    int number = 0;

    do {
        printf("%d ", number);
        number++;
    } while (number <= 100);

    return 0;
}
```

- For

```
#include<stdio.h>
int main()
{
    for (int number = 0; number <= 100; number++) {
        printf("%d ", number);
    }

    return 0;
}
```

Question 02

```
#include<stdio.h>

int main() {
    int marks[10];
    int total = 0;

    printf("Enter 10 marks:\n");
    for (int i = 0; i < 10; i++) {
        scanf("%d", &marks[i]);
        total += marks[i];
    }

    float average = (float)total / 10;

    printf("Total: %d\n", total);
    printf("Average: %.2f\n", average);

    if (average < 50) {
        printf("Fail!\n");
    } else {
        printf("Pass!\n");
    }

    return 0;
}
```

Question 03

```
#include<stdio.h>

int main() {
    int number;
    int factorial = 1;

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

    if (number < 0) {
        printf("Factorial is not defined for negative numbers.\n");
    } else {
        for (int i = 1; i <= number; i++) {
            factorial *= i;
        }

        printf("Factorial of %d is %d\n", number, factorial);
    }

    return 0;
}
```

Question 04

```
#include<stdio.h>

int main() {
    int number, sum = 0;

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

    int remainder;
    while (number > 0) {
        remainder = number % 10;
        sum += remainder;
        number /= 10;
    }
    printf("Sum of digits: %d\n", sum);

    return 0;
}
```

Question 05

```
#include<stdio.h>

int main() {
    int number, reversedNumber = 0, remainder;

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

    do {
        remainder = number % 10;
        reversedNumber = reversedNumber * 10 + remainder;
        number = number / 10;
    } while (number != 0);

    printf("Reversed number: %d\n", reversedNumber);

    return 0;
}
```

Question 06

```
#include<stdio.h>

int main() {
    int base, exponent, result = 1;

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

    printf("Enter the exponent: ");
    scanf("%d", &exponent);

    int i;
    for (i = 0; i < exponent; i++) {
        result *= base;
    }

    printf("%d raised to the power %d is: %d\n", base, exponent, result);

    return 0;
}
```


Question 07

```
#include<stdio.h>

int main() {
    int n = 10;
    int fib[n];
    int i;

    fib[0] = 0;
    fib[1] = 1;

    for (i = 2; i < n; i++) {
        fib[i] = fib[i-1] + fib[i-2];
    }

    printf("The first 10 numbers of the Fibonacci sequence are:\n");
    for (i = 0; i < n; i++) {
        printf("%d ", fib[i]);
    }
    printf("\n");

    return 0;
}
```

Question 08

```
#include<stdio.h>

int main() {
    int number, originalNumber, remainder, result = 0, n = 0;

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

    originalNumber = number;

    while (originalNumber != 0) {
        originalNumber /= 10;
        ++n;
    }
}
```

```

originalNumber = number;

while (originalNumber != 0) {
    remainder = originalNumber % 10;
    int power = 1;
    for (int i = 1; i <= n; ++i) {
        power *= remainder;
    }
    result += power;
    originalNumber /= 10;
}
if (result == number)
    printf("%d is an Armstrong number.\n", number);
else
    printf("%d is not an Armstrong number.\n", number);

return 0;
}

```

Question 09

```

#include<stdio.h>

int main() {
    char letter;

    printf("ASCII values for letters A to Z:\n");

    for (letter = 'A'; letter <= 'Z'; ++letter) {
        printf("%c: %d\n", letter, letter);
    }

    return 0;
}

```

Question 10

```
#include<stdio.h>

int main() {
    int rows = 5; // number of rows in the pattern
    int i, j;

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

    return 0;
}
```

Question 11

```
#include<stdio.h>

int main() {
    int number, i, isPrime = 1;

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

    if (number == 0 || number == 1) {
        isPrime = 0;
    } else {
        for (i = 2; i <= number / 2; ++i) {
            if (number % i == 0) {
                isPrime = 0;
                break;
            }
        }
    }

}
```

```
    if (isPrime) {  
        printf("%d is a prime number.\n", number);  
    } else {  
        printf("%d is not a prime number.\n", number);  
    }  
  
    return 0;  
}
```

Question 12

```
#include<stdio.h>  
  
int main() {  
    int number, i;  
  
    printf("Enter a positive integer: ");  
    scanf("%d", &number);  
  
    printf("Factors of %d are: ", number);  
  
    for (i = 1; i <= number; ++i) {  
        if (number % i == 0) {  
            printf("%d ", i);  
        }  
    }  
  
    printf("\n");  
  
    return 0;  
}
```

Question 13

```
#include<stdio.h>

int main() {
    int number;
    int sum = 0;

    printf("Enter numbers to be added (enter -1 to stop):\n");

    while (1) {
        scanf("%d", &number);

        if (number == -1) {
            break;
        }

        sum += number;
    }
    printf("The sum is: %d\n", sum);

    return 0;
}
```

Question 14

```
#include<stdio.h>

int main() {
    int array[10];
    int i;

    printf("Enter 10 integers:\n");

    for (i = 0; i < 10; i++) {
        scanf("%d", &array[i]);
    }
    printf("The entered array is: ");
    for (i = 0; i < 10; i++) {
        printf("%d ", array[i]);
    }
}
```

```
    printf("\n");

    return 0;
}
```

Question 15

```
#include<stdio.h>

int main() {
    int array[10];
    int i, count = 0;

    printf("Enter 10 integers:\n");

    for (i = 0; i < 10; i++) {
        scanf("%d", &array[i]);
    }

    for (i = 0; i < 10; i++) {
        if (array[i] % 2 == 0) {
            count++;
        }
    }

    printf("The count of even numbers in the array is: %d\n", count);

    return 0;
}
```

Section B

Question 01

```
#include<stdio.h>

int main() {
    int numbers[10];
    int i, positiveCount = 0, negativeCount = 0, zeroCount = 0;

    printf("Enter 10 numbers:\n");

    for (i = 0; i < 10; i++) {
        scanf("%d", &numbers[i]);
    }

    for (i = 0; i < 10; i++) {
        if (numbers[i] > 0) {
            positiveCount++;
        } else if (numbers[i] < 0) {
            negativeCount++;
        } else {
            zeroCount++;
        }
    }

    printf("Positive numbers: %d\n", positiveCount);
    printf("Negative numbers: %d\n", negativeCount);
    printf("Zeros: %d\n", zeroCount);

    return 0;
}
```

Question 02

```
#include<stdio.h>

int main() {
    int marks[10];
    int i, totalMarks = 0, maxMarks, minMarks;

    printf("Enter marks of 10 students:\n");

    for (i = 0; i < 10; i++) {
        scanf("%d", &marks[i]);
        totalMarks += marks[i];

        if (i == 0) {
            maxMarks = marks[i];
            minMarks = marks[i];
        } else {
            if (marks[i] > maxMarks) {
                maxMarks = marks[i];
            }
            if (marks[i] < minMarks) {
                minMarks = marks[i];
            }
        }
    }

    double averageMarks = (double) totalMarks / 10;

    printf("Maximum Marks: %d\n", maxMarks);
    printf("Minimum Marks: %d\n", minMarks);
    printf("Average Marks: %.2lf\n", averageMarks);

    return 0;
}
```


Question 03

```
#include<stdio.h>

int main() {
    double prices[10];
    int i, count = 0;
    double total = 0.0;

    printf("Enter prices of 10 items:\n");

    for (i = 0; i < 10; i++) {
        scanf("%lf", &prices[i]);
        total += prices[i];

        if (prices[i] > 200) {
            count++;
        }
    }

    double average = total / 10;

    printf("Average value of an item: %.2lf\n", average);
    printf("Number of items with price > 200: %d\n", count);

    return 0;
}
```

Question 04

```
#include<stdio.h>

int main() {
    int employeeNo, count = 0;
    double basicSalary;

    printf("Enter employee number and basic salary : \n");

    while (1) {
        scanf("%d", &employeeNo);

        if (employeeNo == -999) {
            break;
        }

        scanf("%lf", &basicSalary);

        if (basicSalary >= 5000) {
            count++;
        }
    }

    printf("Number of employees with a basic salary >= 5000: %d\n", count);

    return 0;
}
```

Question 05

```
#include<stdio.h>

int main() {
    int employeeNo, count = 0, overtimeCount = 0;
    double hoursWorked, overtimePayment, totalOvertimePayment = 0.0;

    printf("Enter employee number and hours worked :\n");

    scanf("%d", &employeeNo);

    while (employeeNo != -999) {
        scanf("%lf", &hoursWorked);

        if (hoursWorked > 40) {
            overtimePayment = 150 * 40 + 200 * (hoursWorked - 40);
        } else {
            overtimePayment = 150 * hoursWorked;
        }
        printf("Employee number: %d\n", employeeNo);
        printf("Overtime payment: %.2lf\n", overtimePayment);

        totalOvertimePayment += overtimePayment; count++;
        if (overtimePayment > 4000) {
            overtimeCount++;
        }
        scanf("%d", &employeeNo);
    }
    double percentageExceeding4000 = (double) overtimeCount / count * 100;

    printf("\nSummary:\n");
    printf("Total employees: %d\n", count);
    printf("Total overtime payment: %.2lf\n", totalOvertimePayment);
    printf("Percentage of employees with overtime payment exceeding Rs. 4000: %.2lf%%\n", percentageExceeding4000);
}
```