

Practical 05

Section A

Q1) Using While loop:

```
#include <stdio.h>

int main() {
    int i = 0;

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

    return 0;
}
```

Using Do..While loop:

```
#include <stdio.h>

int main() {
    int i = 0;

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

    return 0;
}
```

Using For loop:

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

```
int main() {  
    int i;  
  
    for (i = 0; i <= 100; i++) {  
        printf("%d ", i);  
    }  
  
    return 0;  
}
```

Q2)

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

```
int main() {  
    int marks[10];  
    int i, total = 0;  
    float average;  
  
    printf("Enter 10 marks:\n");  
    for (i = 0; i < 10; i++) {  
        scanf("%d", &marks[i]);  
        total += marks[i];  
    }  
  
    average = (float) total / 10;  
  
    printf("Total marks: %d\n", total);  
    printf("Average marks: %.2f\n", average);  
  
    if (average < 50) {  
        printf("Fail!\n");  
    }  
}
```

```
    } else {  
        printf("Pass!\n");  
    }  
  
    return 0;  
}
```

Q3)

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

```
int main() {  
    int number;  
    int i;  
    long long factorial = 1;  
  
    printf("Enter a number: ");  
    scanf("%d", &number);  
  
    if (number < 0) {  
        printf("Factorial is not defined for negative numbers.\n");  
    } else {  
        for (i = 1; i <= number; i++) {  
            factorial *= i;  
        }  
  
        printf("Factorial of %d is %lld\n", number, factorial);  
    }  
  
    return 0;  
}
```

Q4)

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

```
int main() {  
    int number;  
    int sum = 0;  
    int digit;  
  
    printf("Enter a number: ");  
    scanf("%d", &number);  
  
    while (number > 0) {  
        digit = number % 10;  
        sum += digit;  
        number /= 10;  
    }  
  
    printf("Sum of digits: %d\n", sum);  
  
    return 0;  
}
```

Q5)

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

```
int main() {  
    int number;  
    int reversedNumber = 0;  
    int remainder;  
  
    printf("Enter a number: ");  
    scanf("%d", &number);  
  
    do {  
        remainder = number % 10;  
        reversedNumber = reversedNumber * 10 + remainder;  
        number /= 10;  
    } while (number != 0);  
  
    printf("Reversed number: %d\n", reversedNumber);  
  
    return 0;  
}
```

Q6)

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

```
int main() {  
    int base, exponent;  
    int i;  
    long long result = 1;  
  
    printf("Enter the base: ");  
    scanf("%d", &base);  
    printf("Enter the exponent: ");  
    scanf("%d", &exponent);  
  
    for (i = 0; i < exponent; i++) {  
        result *= base;  
    }  
  
    printf("%d raised to the power %d is %lld\n", base, exponent,  
result);  
  
    return 0;  
}
```

Q7)

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

```
int main() {  
    int n = 10; // Number of terms to display  
    int term1 = 0, term2 = 1;  
    int i, nextTerm;  
  
    printf("Fibonacci Sequence: ");  
  
    for (i = 1; i <= n; i++) {  
        printf("%d ", term1);  
        nextTerm = term1 + term2;  
        term1 = term2;  
        term2 = nextTerm;  
    }  
  
    printf("\n");  
  
    return 0;  
}
```

Q8)

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

```
int main() {  
    int number, originalNumber, remainder;  
    int result = 0;  
  
    printf("Enter a number: ");  
    scanf("%d", &number);  
  
    originalNumber = number;  
  
    while (originalNumber != 0) {  
        remainder = originalNumber % 10;  
        result += remainder * remainder * remainder;  
        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;  
}
```


Q9)

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

```
int main() {  
    char letter;  
  
    for (letter = 'A'; letter <= 'Z'; letter++) {  
        printf("Character: %c\tASCII value: %d\n", letter, letter);  
    }  
  
    return 0;  
}
```

Q10)

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

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

Q11)

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

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

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

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

    if (isPrime == 1) {
        printf("%d is a prime number.\n", number);
    } else {
        printf("%d is not a prime number.\n", number);
    }

    return 0;
}
```

Q12)

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

```
int main() {  
    int number;  
    int i;  
  
    printf("Enter a number: ");  
    scanf("%d", &number);  
  
    printf("Factors of %d: ", number);  
    for (i = 1; i <= number; i++) {  
        if (number % i == 0) {  
            printf("%d ", i);  
        }  
    }  
  
    printf("\n");  
  
    return 0;  
}
```

Q13)

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

```
int main() {  
    int number;  
    int sum = 0;  
  
    printf("Enter numbers (Enter -1 to stop): ");  
    while (1) {  
        scanf("%d", &number);  
        if (number == -1) {  
            break;  
        }  
        sum += number;  
    }  
  
    printf("Sum: %d\n", sum);  
  
    return 0;  
}
```

Q14)

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

```
int main() {  
    int numbers[10];  
    int i, count = 0;  
  
    printf("Enter 10 numbers: ");  
    for (i = 0; i < 10; i++) {  
        scanf("%d", &numbers[i]);  
        if (numbers[i] % 2 == 0) {  
            count++;  
        }  
    }  
  
    printf("Count of even numbers: %d\n", count);  
  
    return 0;  
}
```

Section B

1.

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

```
int main() {  
    int numbers[10];  
    int positiveCount = 0, negativeCount = 0, zeroCount = 0;  
    int i;  
  
    printf("Enter 10 numbers: ");  
    for (i = 0; i < 10; i++) {  
        scanf("%d", &numbers[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("Zero numbers: %d\n", zeroCount);  
  
    return 0;  
}
```

2.

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

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

    printf("Enter marks of 10 students: ");
    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];
            }
        }
    }

    printf("Maximum marks: %d\n", maxMarks);
    printf("Minimum marks: %d\n", minMarks);
    printf("Average marks: %.2f\n", (float)totalMarks / 10);

    return 0;
}
```

3.

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

```
int main() {  
    float prices[10];  
    int count = 0;  
    float total = 0;  
    int i;  
  
    printf("Enter the price of 10 items: ");  
    for (i = 0; i < 10; i++) {  
        scanf("%f", &prices[i]);  
  
        total += prices[i];  
  
        if (prices[i] > 200) {  
            count++;  
        }  
    }  
  
    printf("Average price of an item: %.2f\n", total / 10);  
    printf("Number of items with price greater than 200: %d\n", count);  
  
    return 0;  
}
```


4.

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

```
int main() {
```

```
    int employeeNumber;
```

```
    float basicSalary;
```

```
    int count = 0;
```

```
    printf("Enter employee number and basic salary (enter -999 to end):\n");
```

```
    while (1) {
```

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

```
        if (employeeNumber == -999) {
```

```
            break;
```

```
        }
```

```
        scanf("%f", &basicSalary);
```

```
        if (basicSalary >= 5000) {
```

```
            count++;
```

```
        }
```

```
    }
```

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

```
    return 0;
```

```
}
```

5.

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

```
int main() {
    int employeeNumber;
    int hoursWorked;
    int overtimeRate = 150;
    int overtimePayment;
    int count = 0;
    int totalEmployees = 0;

    printf("Enter employee number and hours worked (enter -999 as
employee number to end): \n");
    while (1) {
        scanf("%d", &employeeNumber);

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

        scanf("%d", &hoursWorked);

        overtimePayment = (hoursWorked > 40) ? (40 * overtimeRate) +
((hoursWorked - 40) * 200) : (hoursWorked * overtimeRate);

        printf("Employee Number: %d\n", employeeNumber);
        printf("Overtime Payment: %d\n", overtimePayment);

        if (overtimePayment > 4000) {
            count++;
        }

        totalEmployees++;
    }

    float percentage = (count / (float)totalEmployees) * 100;
```

```
    printf("Percentage of employees with overtime payment exceeding  
Rs. 4000: %.2f%%\n", percentage);
```

```
    return 0;  
}
```