Practical Number 05

Student id :- 30583

```
Q1. #include <stdio.h>

Using while
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  loop

#include <stdio.h>

int main() {
    int i;

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

    return 0;
}
```

Q2.
```c
#include <stdio.h>

int main ()
{
int marks[10];
int i=0,total = 0;
float average

printf("Enter 10 marks:\n");
while (i < 10)
{
printf ("Mark %d:",i+1);
scanf("%d",&marks[i]);
total += marks[i];
i++;
}

average = (float) total / 10.0;
printf ("Total: Sd\n", total);
printf ("Average: 8.2f\n", average) ;

if (average < 50.0)
printf ("Fail!\n");

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

Q3.
```c
#include <stdio.h>

int main() {
    int number, i;
    unsigned long long factorial = 1;

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

    // Calculate factorial
```

```c
    for (i = number; i >= 1; i--) {
        factorial *= i;
    }

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

    return 0;
}
```

Q4.

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

int number, originalNumber, digit, sum = 0;

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

originalNumber = number;

while (number != 0) {
    digit = number % 10;
    sum += digit;
    number /= 10;
}

printf("Sum of digits of %d is: %d", originalNumber, sum);

return 0;

}
```

Q5.

```c
#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 /= 10;

} while (number != 0);
```

```c
printf("Reversed number: %d/n", reversedNumber);

return 0;
}
```
Q6

```c
#include <stdio.h>

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

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

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

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

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

    return 0;
}
```

```c
Q7. #include <stdio.h>
int main() {
    int num1 = 0, num2 = 1, next, count;

    printf("First 10 numbers of the Fibonacci sequence:\n");
    printf("%d\n%d\n", num1, num2);

    for (count = 3; count <= 10; count++) {
        next = num1 + num2;
        printf("%d\n", next);
        num1 = num2;
        num2 = next;
    }
    return 0;
}
```

Q8.

```c
#include <stdio.h>
int power(int base, int exponent) {
    int result = 1;
```

```c
        while (exponent != 0) {
            result *= base;
            --exponent;
        }
        return result;
    }
    int countDigits(int number) {
        int count = 0;
        while (number != 0) {
            number /= 10;
            ++count;
        }
        return count;
    }
    int isArmstrong(int number) {
        int originalNumber = number;
        int digits = countDigits(number);
        int result = 0;

        while (originalNumber != 0) {
            int remainder = originalNumber % 10;
            result += power(remainder, digits);
            originalNumber /= 10;
        }
        if (result == number)
            return 1;
        else
            return 0;
    }
    int main() {
        int number;
        printf("Enter a number: ");
        scanf("%d", &number);
        if (isArmstrong(number))
            printf("%d is an Armstrong number.\n", number);
        else
            printf("%d is not an Armstrong number.\n", number);
        return 0;
    }
```

Q9.

```c
#include <stdio.h>

int main() {
char letter;
int i;

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

```c
for (i = 65, letter = 'A'; i <= 90; i++,letter++) {
    printf("%c: %d\n",letter,i);
}
}
```

Q10.
```c
#include<stdio.h>
int main(){
int s,t,rows;

printf("Enter the number of rows");
scanf("%d", &rows) ;

for (s=1; s<= rows; s++) {
        for (t= 1;t <= s;t++){
            printf("*");

        }
        printf("\n");
}
}
```

Q11.
```c
#include<stdio.h>
int itprime (int num1){
if (num1<= 1){
    return 0;
}

for (int s= 2; s * s<= num1; s++){
    if (num1 % s == 0){
        return 0;
    }
}
return 1;
}


int main(){
int num1;

printf("Enter a positive integer");
scanf("%d",&num1);

if (itprime(num1)){
    printf("%d is a prime number.\n",num1);
}else {
    printf("%d is not a prime number.\n",num1);
}
```

```
return 0;
}
```

Q12.

```c
#include <stdio.h>

void printFactors(int num1) {

    printf("Factors of %d are: ", num1);
    for (int s = 1; s <= num1; s++) {

        if (num1 % s == 0) {
            printf("%d ", s);
        }
    }
    printf("\n");
}

int main() {

    int number;
    printf("Enter an integer: ");
    scanf("%d", &number);
    printFactors(number);
    return 0;
}
```

Q12.2

```c
#include<stdio.h>
int main (){
    int number1,sum = 0;

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

    while (1) {
        scanf("%d",&number1);
        if (number1 == -1) {
            break;
        }
        sum += number1;
}
    printf("The sum is: %d\n ",sum);

    return 0;
}
```

Q13

```c
#include <stdio.h>

#define SIZE 10

int main() {
    int array[SIZE];

    printf("Enter %d numbers:\n", SIZE);
    for (int s = 0; s < SIZE; s++) {
        scanf("%d", &array[s]);
    }

    printf("The array is: ");
    for (int s = 0; s < SIZE; s++) {
        printf("%d ", array[s]);
    }
    printf("\n");

    return 0;
}
```

Q14.

```c
#include <stdio.h>

#define SIZE 10

int main() {
    int array[SIZE];
    int count = 0;

    printf("Enter %d numbers:\n", SIZE);
    for (int s = 0; s < SIZE; s++) {
        scanf("%d", &array[s]);
    }

    for (int s = 0; s < SIZE; s++) {
        if (array[s] % 2 == 0) {
            count++;
        }
    }

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

    return 0;
}
```

Section B

```c
// Task 1: Count positive, negative, and zero numbers
int main () {
    int numbers[10];
    int positiveCount = 0, negativeCount = 0, zeroCount = 0;

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

        if (numbers[s] > 0) {
            positiveCount++;
        } else if (numbers[s] < 0) {
            negativeCount++;
        } else {
            zeroCount++;
        }
    }

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

// Task 2: Calculate maximum, minimum, and average marks

int main() {
    int marks[10];
    int maxMark, minMark;
    float averageMark = 0;

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

        if (s == 0) {
            maxMark = marks[s];
            minMark = marks[s];
        } else {
            if (marks[s] > maxMark) {
                maxMark = marks[s];
            }
            if (marks[s] < minMark) {
                minMark = marks[s];
            }
        }

        averageMark += marks[s];
    }
```

```c
    averageMark /= 10;

    printf("Maximum mark: %d\n", maxMark);
    printf("Minimum mark: %d\n", minMark);
    printf("Average mark: %.2f\n", averageMark);

    return 0;
}


// Task 3: Calculate average price and count items with price > 200
int main() {
    float prices[10];
    float averagePrice = 0;
    int count = 0;

    printf("Enter price of 10 items:\n");
    for (int s = 0; s < 10; s++) {
        scanf("%f", &prices[s]);

        averagePrice += prices[s];

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

    averagePrice /= 10;

    printf("Average price: %.2f\n", averagePrice);
    printf("Number of items with price > 200: %d\n", count);
}

// Task 4: Count employees with salary >= 5000
int main() {
    int employeeNo;
    float salary;
    int count = 0;

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

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

        scanf("%f", &salary);

        if (salary >= 5000) {
```

```c
            count++;
        }
    }

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

// Task 5: Calculate overtime payment and count employees with payment > 4000

#include <stdio.h>

int main () {

    int employee_number, work_hours, overtime_rate = 150;
    int overtime_rate_excess = 200, counter;
    int overtime_payment, overtime_exceed_count = 0;

    do {
        printf("Employee number: ");
        scanf("%d", &employee_number);

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

        printf("Work hours: ");
        scanf("%d", &work_hours);

        if (work_hours > 40) {
            overtime_payment = (40 * overtime_rate) + ((work_hours - 40) *
overtime_rate_excess);
        }
        else {
            overtime_payment = work_hours * overtime_rate;
        }

        if (overtime_payment > 4000) {
            overtime_exceed_count++;
        }

        printf("Employee No: %d\n", employee_number);
        printf("Overtime Payment: Rs. %d\n", overtime_payment);

        counter++;

    } while (1);

    float overtime_exceed_percentage = (float)overtime_exceed_count;

    printf("Overtime payment exceeds employee percentage: %.2f\n",
overtime_exceed_percentage);
```

```
    return 0;
}
```