PRACTICLE 05

Section A

Question No:01

While loop

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

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

Do while loop

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

int main()
{
    int x;
```

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

For loop

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

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

Question No:02

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

```
int main()
{
    float mark,ave,total;
    int count;
    count=1;
    while (count<=10)
    {
        printf("Enter the mark ");
        scanf("%f",&mark);
        total=total+mark;
        ave=total/count;
        count++;
    }
    printf("%.2f\n",ave);
    if (ave<50)
        printf("Fail");
    else printf("Pass");
    return 0;
}
```

Question No:03

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

int main()
{
```

```
    //calculate the factorial
    int no,count,fac;
    fac=1;
    printf("Enter a number ");
    scanf("%d",&no);
    count=no;
    do
    {
        fac=fac*count;
        count--;
    }
    while(count>=1);
    switch (no)
    {
        case 0:printf("The factorial is 1");break;
        default:printf("The factorial of %d is
%d",no,fac);
    }
    return 0;
}
```

Question No:04

```
#include <stdio.h>

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

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

    // Calculate the sum of digits
    while (number != 0) {
        int digit = number % 10;
        sum += digit;
        number /= 10;
    }

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

    return 0;
}
```

Question No:05

```
#include <stdio.h>

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

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

    do {
        int digit = number % 10;
```

```
        reversedNumber = (reversedNumber * 10) + digit;
        number /= 10;
    } while (number != 0);

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

    return 0;
}
```

Question No:06

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

int main()
{
    int x,power,count;
    printf("Enter a number ");
    scanf("%d",&x);
    count=9;
    power=1;
    while(count>=1)
    {
        power=power*x;
        count--;
    }
    printf("The ninth power of %d is %d",x,power);
```

```
    return 0;
}
```

Question No:07

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

int main()
{
    int count,x,y,fib;
    fib=1;
    x=0;
    y=0;
    do
    {
        printf("%d ",fib);
        x=fib;
        fib=x+y;
        y=x;
        count++;
    }while(count<=10);

    return 0;
}
```

Question No:08

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

```
#include <math.h>

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

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

    originalNumber = number;

    // Count the number of digits
    while (originalNumber != 0) {
        originalNumber /= 10;
        digits++;
    }

    originalNumber = number;

    // Calculate the sum of the cubes of digits
    while (originalNumber != 0) {
        remainder = originalNumber % 10;
        result += pow(remainder, digits);
        originalNumber /= 10;
    }
```

```
    // Check if the number is an Armstrong number
    if (result == number) {
        printf("%d is an Armstrong number.\n", number);
    } else {
        printf("%d is not an Armstrong number.\n",
number);
    }

    return 0;
}
```

Question No: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 No:10

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

int main()
{
    int x,y;
    for(x=1;x<=5;x++)
    {
        for(y=1;y<=x;y++)
        {
            printf("*");
        }
        printf("\n");
    }

    return 0;
}
```

Question No:11

```
#include <stdio.h>

int isPrime(int number) {
    if (number <= 1) {
        return 0; // Not prime
    }
```

```
    for (int i = 2; i * i <= number; i++) {
        if (number % i == 0) {
            return 0; // Not prime
        }
    }

    return 1; // Prime
}

int main() {
    int number;

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

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

    return 0;
}
```

Question No:12

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

```
void printFactors(int number) {
    printf("Factors of %d: ", number);

    for (int i = 1; i <= number; i++) {
        if (number % i == 0) {
            printf("%d ", i);
        }
    }

    printf("\n");
}

int main() {
    int number;

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

    printFactors(number);

    return 0;
}
```

Question No:13

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

```
int main()
{
   int x,sum;
   do
   {
        printf("Enter a number ");
        scanf("%d",&x);
        sum=sum+x;
   }
   while(x!=-1);
   printf("%d",sum);

    return 0;
}
```

Question No:14

```
#include <stdio.h>

int main() {
    int array[10];

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

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

```
    }

    printf("Array elements:\n");

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

    printf("\n");

    return 0;
}
```

Question No:15

```
#include <stdio.h>

int main() {
    int array[10];
    int evenCount = 0;

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

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

        // Check if the number is even
```

```
        if (array[i] % 2 == 0) {
            evenCount++;
        }
    }

    printf("Even numbers count: %d\n", evenCount);

    return 0;
}
```

Section B

Question No:01

```
#include <stdio.h>

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

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

    for (int 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 count: %d\n",
positiveCount);
    printf("Negative numbers count: %d\n",
negativeCount);
    printf("Zero count: %d\n", zeroCount);

    return 0;
}
```

Question No:02

```
#include <stdio.h>

int main() {
    int marks[10];
    int sum = 0;
    int maximum, minimum;

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

    // Read marks and calculate sum
```

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

        // Initialize maximum and minimum with the
first element
        if (i == 0) {
            maximum = marks[i];
            minimum = marks[i];
        } else {
            // Update maximum and minimum
            if (marks[i] > maximum) {
                maximum = marks[i];
            }
            if (marks[i] < minimum) {
                minimum = marks[i];
            }
        }
    }

    // Calculate average
    float average = (float)sum / 10;

    printf("Maximum marks: %d\n", maximum);
    printf("Minimum marks: %d\n", minimum);
    printf("Average marks: %.2f\n", average);
```

```
    return 0;
}
```

Question No:03

```
#include <stdio.h>

int main() {
    float prices[10];
    float sum = 0.0;
    int count = 0;
    int numItemsAbove200 = 0;

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

    // Read prices and calculate sum
    for (int i = 0; i < 10; i++) {
        scanf("%f", &prices[i]);
        sum += prices[i];

        // Count number of items above 200
        if (prices[i] > 200) {
            numItemsAbove200++;
        }
    }
```

```
    // Calculate average value of an item
    float average = sum / 10;

    printf("Average value of an item: %.2f\n",
average);
    printf("Number of items with price above 200:
%d\n", numItemsAbove200);

    return 0;
}
```

Question No:04

```
#include <stdio.h>

int main() {
    int employeeNo;
    float basicSalary;
    int count = 0;

    printf("Enter the employee number and basic salary
(enter -999 for employee number to stop):\n");

    while (1) {
        printf("Employee number: ");
        scanf("%d", &employeeNo);

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

```
            break;  // Exit the loop
        }

        printf("Basic salary: ");
        scanf("%f", &basicSalary);

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

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

    return 0;
}
```

Question No:05

```
#include <stdio.h>

#define OVERTIME_RATE_NORMAL 150
#define OVERTIME_RATE_EXCESS 200
#define MAX_EMPLOYEES 100

int main() {
    int employeeNo[MAX_EMPLOYEES];
    int hoursWorked[MAX_EMPLOYEES];
```

```
    float overtimePayment[MAX_EMPLOYEES];
    int count = 0;
    int countExceeding4000 = 0;

    printf("Enter the employee number and hours worked
(enter -999 for employee number to stop):\n");

    while (1) {
        printf("Employee number: ");
        scanf("%d", &employeeNo[count]);

        if (employeeNo[count] == -999) {
            break;  // Exit the loop
        }

        printf("Hours worked: ");
        scanf("%d", &hoursWorked[count]);

        if (hoursWorked[count] > 40) {
            int overtimeHours = hoursWorked[count] -
40;
            overtimePayment[count] = 40 *
OVERTIME_RATE_NORMAL + overtimeHours *
OVERTIME_RATE_EXCESS;
        } else {
            overtimePayment[count] = 0;
        }
```

```
        if (overtimePayment[count] > 4000) {
            countExceeding4000++;
        }

        count++;
    }

    printf("\nEmployee Details:\n");
    printf("-----------------\n");

    for (int i = 0; i < count; i++) {
        printf("Employee Number: %d\n", employeeNo[i]);
        printf("Overtime Payment: %.2f\n",
overtimePayment[i]);
        printf("-----------------\n");
    }

    float percentageExceeding4000 = (float)
countExceeding4000 / count * 100;
    printf("Percentage of employees with overtime
payment exceeding Rs. 4000: %.2f%%\n",
percentageExceeding4000);

    return 0;
}
```