

Output:-

Enter your name:- Abhishek
Enter your roll number:- 1711
Enter your percentage:- 95
Enter your mob no:- 1234567890
Enter your grade:- A

Your name is:- Abhishek
Your roll number is:- 1711
Your Percentage is:- 95
Your mobile number is:- 1234567890
Your grade is:- A

25

PRACTICAL-01

Aim:- To study the use of different datatypes and I/O functions.

Source Code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int roll;
    int num;
    char name[50];
    float per;
    long int num; char grade;
    printf("\nEnter your name :- ");
    gets(name);
    printf("\nEnter your roll number :- ");
    scanf("%d", &roll);
    printf("\nEnter your percentage :- ");
    scanf("%f", &per);
    printf("\nEnter your mobile no :- ");
    scanf("%d", &num);
    printf("\nEnter your grade :- ");
    scanf("%c", &grade);
    printf("\nYour name is :- ", name);
    printf("\nYour roll number is :- %d", roll);
    printf("\nYour percentage is :- %f", per);
    printf("\nYour phone number is :- %d", num);
    printf("\nYour grade is :- %c", grade);  
29/11/19
```

PRACTICAL - 2

Aim:- Write a C program which will show the use of various different types of operators.

Arithmetic Operator:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int a, b, add, sub, mul, div;
    clrscr();
    printf("Enter first number: ");
    scanf("%d", &a);
    printf("Enter second number: ");
    scanf("%d", &b);
    add = a+b;
    sub = a-b;
    mul = a*b;
    div = a/b;
    printf("Addition is %d", add);
    printf("Subtraction is %d", sub);
    printf("Multiplication is %d", mul);
    printf("Division is %d", div);
    getch();
}
```

Output:-

Enter first number: 8
 Enter second number: 4
~~Addition is: 12~~
~~Subtraction is: 4~~
~~Multiplication is: 32~~
~~Division is: 2~~

85
 Output:
 Enter first value = 9
 Enter second value = 8
 Enter third value = 2
 value 1 is : 0
 value 2 is : 1
 value 3 is : 1
 value 4 is : 0
 value 5 is : 1

27 # Logical Operators

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int x, y, z;
    int val1, val2, val3, val4, val5;
    clrscr();
    printf("Enter first value: ");
    scanf("%d", &x);
    printf("Enter second value: ");
    scanf("%d", &y);
    printf("Enter third value: ");
    scanf("%d", &z);
    val1 = (x < y) && (z > y);
    printf("value 1 is %d \n", val1);
    val2 = (x == y) || (z < y);
    printf("value 2 is %d \n", val2);
    val3 = (x < y) || (z == y);
    printf("value 3 is %d \n", val3);
    val4 = !(x == y);
    printf("value 4 is %d \n", val4);
    val5 = (x == y);
    printf("value 5 is %d \n", val5);
    getch();
}
```

SS

Ternary Operator:-

```
#include <conio.h>
#include <stdio.h>
void main()
{
    int a=100, b=20, c=50, big;
    clrscr();
    big: a>b ? a : b;
    printf ("The biggest number is: %d", big);
    getch();
}
```

Output:-

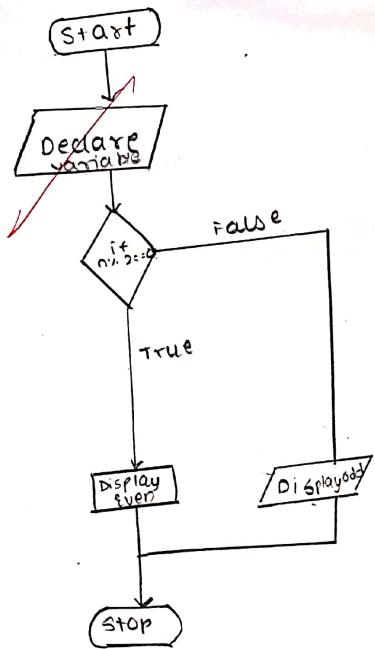
The biggest number is 100

28

Output:-
Enter: 2
even Number

Enter: 3
odd Number

Flowchart:-



Practical 3

Aim:- Program on Decision Statements.

i) Write a program to find odd and even numbers.

Algorithms:-

- Step 1:- Start
- Step 2:- [Take input] Read a number from users
- Step 3:- Check if number $n \% 2 == 0$ then
print "even number" else
print "Odd number".
- Step 4:- Exit

Program:-

```

#include <stdio.h>
#include <conio.h>
void main()
{
    int n;
    clrscr();
    printf("Enter:");
    scanf("%d", &n);
  
```

```

if (ny % 2 == 0)
{
    printf("Even");
}
else
{
    printf("Odd");
}
getch();

```

2) WAP to find whether the year is leap year or not

* Algorithm:

Step1:- Start
Step2:- [Take input] Read year from user.

Step 3:- if $\text{year} \% 4 == 0$ and $\text{year} \% 400 == 0$ or $\text{year} \% 4 == 0$ and $\text{year} \% 100 != 0$
print "leap year".
else print "Not a leap year".

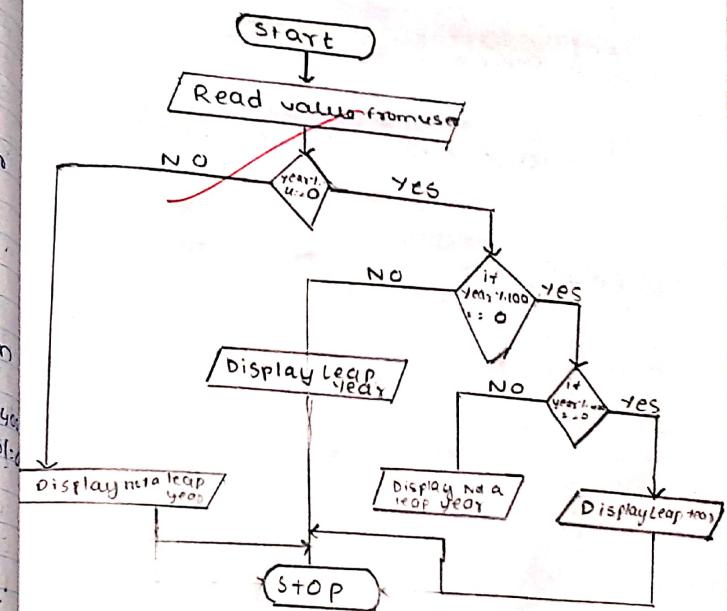
Step4:- Exit

OUTPUT:-

enter year: 2012
Leap Year

enter year: 2019
Not a leap Year

Flowchart:-



Output:
Enter -

Program:-

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int year;
    clrscr();
    printf("Enter year:");
    scanf("%d", &year);
    if (year % 4 == 0)
    {
        if (year % 100 == 0)
        {
            if (year % 400 == 0)
                printf("leap year");
            else
                printf("Not a leap year");
        }
        else
            printf("Not a leap year");
    }
    getch();
}
```

18

- * Q3. WAP to find whether the entered character is vowel or not.

Algorithm:-

- Step 1:- Start.
Step 2:- [Take Input] Read character value from user.
Step 3:- Use the appropriate condition and print the essential statement. If the condition is false print the appropriate message.
Step 4:- Exit.

Program:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    char vowel;
    clrscr();
    printf("Enter vowel");
    scanf("%c", &vowel);
    if(vowel == 'a' || vowel == 'e' || vowel == 'i'
       || vowel == 'o' || vowel == 'u')
        printf("It is a vowel");
}
```

32

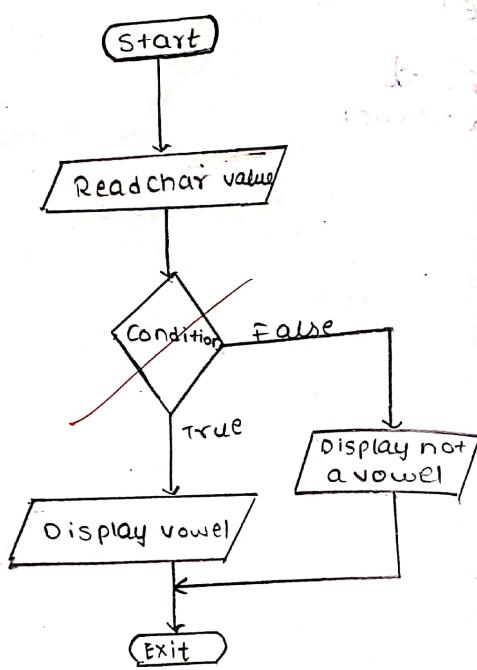
Output:-

Enter: o

isVowel

Enter: d
not a vowel

SC
Flowchart:-



33
else {
 printf("Not a vowel");
 getch();
}

PRACTICAL-4

Aim: WAP to demonstrate the use of loops:
 → FOR loop
 → while loop
 → do while loop.

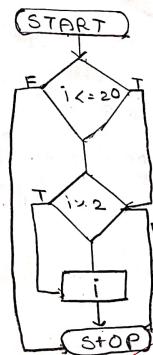
A) FOR loop:-

- Algorithm:-**
- 1) To include the header files as per the program!
 - 2) Create a void main and declare variable i. Use the if condition statement with appropriate iterations condition inside for loop.
 - 3) Use the getch method and close the scope of void main

source code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i,
    for(i=0; i<=20; i++)
    {
        if (i%2==0)
            printf("The numbers are %d /t");
    }
}
```

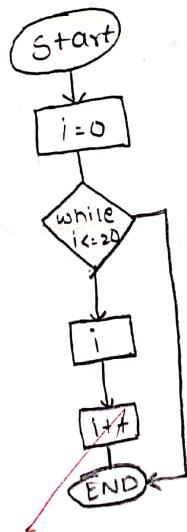
34



Output:-

2 4 6 8 10 12 14 16 18 20

C
E
C
V
V
V
V
U



Output:-

0 2 4 6 8

2 4

Output:-

2468101214161820

B) while loop:

Algorithm:-

- 1 Import the header files in the void main program.
- 2 Open the void main and inside that declare a variable.
- 3 Use the while loop with appropriate condition and inside that use the if conditional statement print the required output.
- 4 Use the getch() and close the scope of void main.

Source Code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i;
    clrscr();
    while(i <= 20)
    {
        if(i % 2 == 0)
            printf("%d", i);
        getch();
    }
}
```

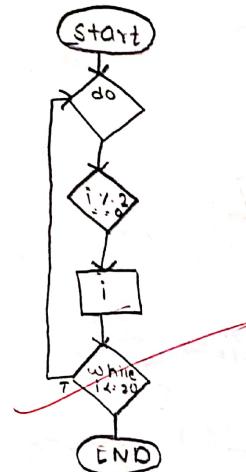
c) Do while loop:-

Algorithm:-

- 1) Include the header files in the program.
- 2) Use the void main and inside that declare a variable i.
- 3) Use the do while loop and inside do use the if conditional statement with appropriate condition.
- 4) Inside while declare write the appropriate condition finally use the getch method and close the scope of void main.

Source code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i;
    clrscr();
    do
    {
        if (i<2)
            { printf("%d", i); }
    } while (i<20);
    getch();
}
```

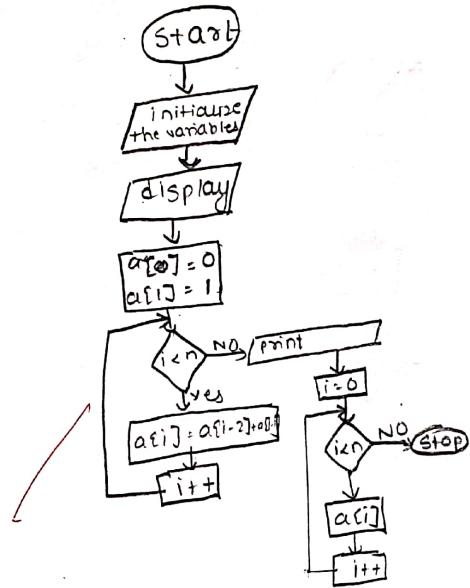


Output:-

2468101214161820

Mr. 14/11/2020

Flowchart



OUTPUT:-

Enter: 4
Fibonacci series is
0 1 1 2

PRACTICAL-5

37

Aim:- To demonstrate the use of array.

AJ Fibonacci Series

Algorithm.

Step 1:- Start

Step 2:- Initialize the variables.

Step 3:- Print the appropriate statement and takes the input from user.

Step 4:- Use the for loop and write the appropriate condition.

Step 5:- Print the array

Step 6:- Stop.

Source code:-

```

#include<stdio.h>
#include<conio.h>
void main()
{
    int a[40], n, i;
    clrscr();
    printf("Enter: ");
    scanf("%d", &n);
    a[0] = 0;
    a[1] = 1;
    for(i = 2; i < n; i++)
    {
        a[i] = a[i-2] + a[i-1];
    }
    printf("Fibonacci series is: ");
  
```

for (i = 0; i < n; i++)
{
 printf("%d\n", arr[i]);
}
getch();

B3 Addition of two matrix:-
Source code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i, j, rows, columns; int a[30][30], b[30][30];
    clrscr();
    printf("Enter rows:");
    scanf("%d", &rows);
    printf("Enter columns:");
    scanf("%d", &columns);

    for(i=0; i<rows; i++)
    {
        for(j=0; j<columns; j++)
        {
            printf("Enter a[%d][%d] element:", i, j);
            scanf("%d", &a[i][j]);
        }
    }

    for(i=0; i<rows; i++)
    {
        for(j=0; j<columns; j++)
        {
            printf("Addition is %d + %d = %d\n", a[i][j], b[i][j], a[i][j] + b[i][j]);
        }
    }
}
```

EE

getchar;

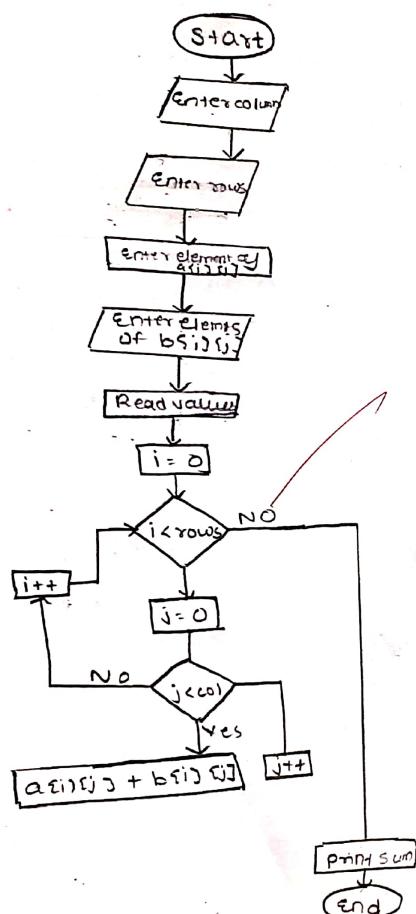
B) Addition of two matrix:

Algorithm:

- v a) Start
- v b) Include the header s files in the program create a void no and declare 4 variables namely rows and columns and 2D arrays of size 30 and 30.
- v c) Use the printf and scanf method to take the input from the user of rows and columns.
- v d) Use the for loop and with appropriate condition and inside for loop use another for loop with appropriate condition.
- v e) Use the printf and scanf method for taking input of element from the user and store it in one array.
- v f.) Repeat the above step for storing element in array b

40

40



41

g) Finally use ~~two~~ nested for loops for printing the matrix so formed.
 To use the getch() method to get the output on the console screen and close the scope of void main

i) Stop

Source code:-

```

#include <iostream.h>
#include <conio.h>
void main()
{
    int i, j, rows, col;
    int a[30][30];
    int b[30][30];
    clrscr();
    printf("Enter columns:");
    scanf("%d", &col);
    printf("Enter rows:");
    scanf("%d", &rows);
    printf("\n");
    for(i=0; i<rows; i++)
    {
        for(j=0; j<col; j++)
        {
            printf("Enter a[%d][%d] element", i, j);
            a[i][j] = getch();
            b[i][j] = getch();
        }
    }
    for(i=0; i<rows; i++)
    {
        for(j=0; j<col; j++)
        {
            cout << a[i][j] + b[i][j];
        }
        cout << endl;
    }
    getch();
}
  
```

```

10
    scanf("%d", &a[i][j]);
    } printf("\n");
for(i=0; i<rows; i++)
{
    for(j=0; j<cols; j++)
    {
        printf("Enter b[%d][%d].", i, j);
        scanf("%d", &b[i][j]);
    }
}
for(i=0; i<rows; i++)
{
    for(j=0; j<cols; j++)
    {
        printf("Addition is %d", a[i][j]+b[i][j]);
    }
    printf("\n");
}
getch();
}

```

Output:

42

```

Enter columns:- 2
Enter rows:- 2
Enter a[0][0] = 1
Enter b[0][1] = 2
Enter a[1][0] = 2
Enter b[1][1] = 1
Enter b[0][0] =
Enter b[0][1] =
Enter b[1][0] =
Enter b[1][1] =

```

Addition is:

2	3
2	2

Jani
14/1/2020

PRACTICAL-6

43

Aim:- To demonstrate the use of functions using C.

algorithms:-

A) Factorial of number using recursion:

Algorithm:-

- 1) Start
- 2) Include the header files and declare a fact function with a single parameter
- 3) Declare the void main and inside the definition of void main function declare a variable which will accept the value and store the value.
- 4) Call the function
- 5) Define the fact function with appropriate parameters
- 6) Return the appropriate values and call the function in the main function and also store it into a variable.
- 7) Stop.

8

Program:-

```
#include<stdio.h>
#include<conio.h>
int fact(int a);
void main()
{
    int z, num;
    clrscr();
    printf("Enter:");
    scanf("%d", &num);
    z = fact(num);
    printf("The factorial is %d", z);
    getch();
}

int fact(int a)
{
    if(a==0)
        return 1;
    else
        return a * fact(a-1);
}
```

44

Output :-

Enter:5

The factorial is 120

B.7 Sum of two numbers :-

Algorithm:-

① Start

② Include the headers files and declare a function named sum with two parameters.

③ Declare the void main function and inside that accept the two numbers from user and store it into the variables.

④ Define the sum function and do the required operations inside the function and return the appropriate value.

⑤ Call the sum function in the main program and store it into a variable.

⑥ Print the value with appropriate statement.

⑦ STOP

28

source code:

```
#include <stdio.h>
#include <conio.h>
int sum(int a, int b);
void main()
{
    int x, y, z; clrscr();
    printf("Enter first number: ");
    scanf("%d", &x);
    printf("Enter second number: ");
    scanf("%d", &y);
    z = sum(x, y);
    printf("The sum of two numbers is: %d", z);
    getch();
}
```

```
int sum(int a, int b)
{
    int c;
    c = a + b;
    return c;
}
```

Output:

enter first number: 10
enter second number: 2
the sum of two numbers is: 12

46

Practical-7

47

Aim: To demonstrate the use of structure and union.

Algorithms:-

A) Program to read the book details:-

- 1) Start
- 2) Include the header files and create a structure which has following attributes:-
 - a) Price
 - b) Name
 - c) ID
 - d) Name of Author
- 3) Assign appropriate datatype and now open the void main function and use the structure so created.
- 4) By using add the entries and store it into the variables.
- 5) Display the content using the printf statement.
- 6) Stop

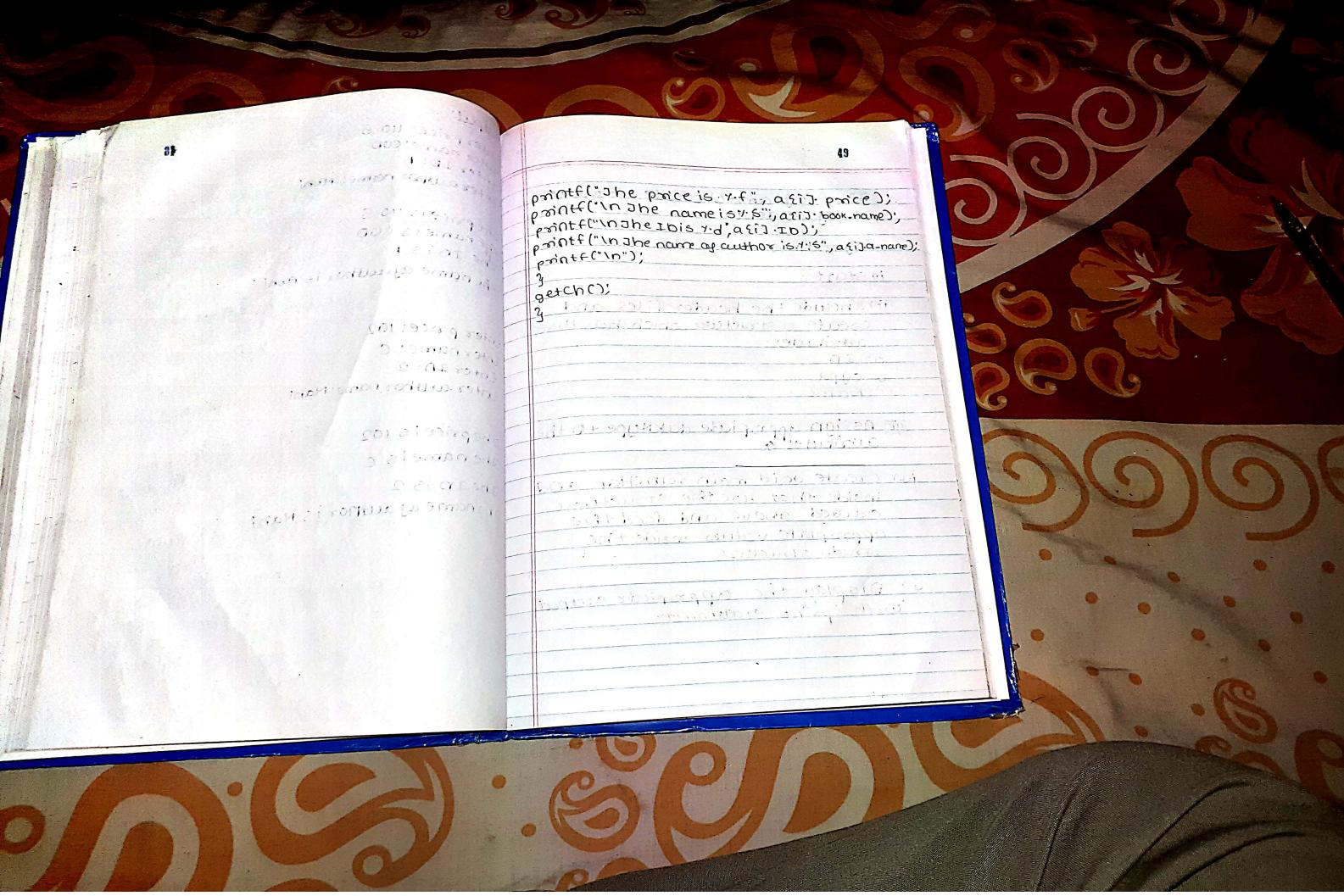
Source Code:

```
#include <stdio.h>
#include <conio.h>
void main()
{
    struct book
    {
        float price;
        char book-name[30];
        int id;
        char a-name[30];
    };
    void main()
    {
        struct book a[100];
        int i;
        clrscr();
        for (i=1; i<3; i++)
        {
            printf("Enter price: ");
            scanf("%d", &a[i].price);
            printf("Enter name: ");
            scanf("%s", &a[i].book-name);
            printf("Enter ID: ");
            scanf("%d", &a[i].id);
            printf("Enter author name: ");
            scanf("%s", &a[i].a-name);
            printf("\n");
        }
    }
}
```

Output:-

enter price! 110.5
 enter name! COD
 enter ID! 1
 enter author name! Abhi
 The price is 110.5
 The name is COD
 The ID is 1
 The name of author is Abhi

enter price! 102
 enter name! C
 enter ID= 2
 enter author name! Mahi
 The price is 102
 The name is C
 The ID is 2
 The name of author is Mahi



```
49
printf("the price is %f\n", a[1].price);
printf("\nthe name is %s", a[1].book.name);
printf("\nthe ID is %d", a[1].ID);
printf("\nthe name of author is %s", a[1].a-name);
printf("\n");
```

```
} getch();
```

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

```
int main()
{ clrscr();
```

```
    printf("Enter the value of a = ");
```

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

```
    printf("The value of a is %d", a);
```

```
    getch();
```

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

```
int main()
{ clrscr();
```

```
    printf("Enter the value of a = ");
```

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

```
    printf("The value of a is %d", a);
```

```
    getch();
```

B) Program to create structure of student.

Algorithms:-

i) Start

ii) Include the header files and create a structure which has three attributes:-

- a) ID
- b) CGPA
- c) Name

iii) Assign appropriate datatype to the attributes.

iv) Create void main function and inside that use the structure created above and feed the appropriate values inside the ~~student~~ structure.

v) Display the appropriate output with print statement.

10

Output:-

Enter id: 1
Enter cgpa: 9.6
Enter name: Abhi

The ID is 1
The cgpa is 9.6
The name is Abhi

Enter id: 2
Enter cgpa:
Enter cgpa: 9.5
The name is Mohit

51

Source code:-

```
#include <stdio.h>
#include <conio.h>
struct std
{
    int id;
    float cgpa;
    char name[30];
};

void main()
{
    struct std std1[100];
    int i;
    clrscr();
    for(i=1; i<3; i++)
    {
        printf("Enter id: ");
        scanf("%d", &std1[i].id);
        printf("Enter cgpa: ");
        scanf("%f", &std1[i].cgpa);
        printf("Enter name: ");
        scanf("%s", std1[i].name);
        printf("\n");
        printf("The id is %d\n", std1[i].id);
    }
}
```

```
printf("The Id is %d", std::id[i].id);
printf("The CGPA is %f", std::id[i].cgpa);
printf("The name is %s", std::id[i].name);
getch();
```

--
Enter id: 2
Enter CGPA: 9.5
Enter Name: Mahi

The id is 2
The CGPA is 9.5
The name is Mahi

Practical - 8

53

Aim:- To demonstrate the use of string manipulation function.

A) Program to find ASCII of a letter.

Algorithms:-

- ① START
- ② Include the header files, and create avoid main block inside that ~~is~~ declare a variable of data type character.
- ③ Read the value from the user and store it into the variable.
- ④ use the appropriate print statement and display the ASCII value of the entered letter.

Source Code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    char a;
    clrscr();
    printf("Enter : ");
    scanf("%c", &a);
    printf("ASCII value of %c is %d", a, a);
```

B) Using variables

B) Program to find whether the entered string is palindrome or not.

Algorithms:-

- START
- Include the header files and define void main function inside that use the array of any size.
- Take input from the user and store it into a variable as array.
- use the strrev() function as

Enter : a

The ASCII value of a is 97

enter : -

The ASCII value of - is 95

* Output:-
enter string: mom
It is a palindrome

enter string: Ram
It is not a palindrome

store the output in the variable.

compare the two variables and display the appropriate message.

Source code:

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main()
{
    char str[50];
    char str1[50];
    clrscr();
    printf("Enter string: ");
    scanf("%s", &str);
    str1 = strrev(str);

    if(str == str1)
    {
        printf("It is palindrome");
    }
    else
    {
        printf("Not a palindrome");
    }
}
```