



# **CHRIST**

(DEEMED TO BE UNIVERSITY)

B A N G A L O R E • I N D I A

## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**Computer Programming  
(CS134P)**

B. Tech Degree- CHEMISTRY CYCLE

**School of Engineering and Technology,  
CHRIST (Deemed to be University),  
Kumbalagodu, Bengaluru-560 074**

December 2021



**CHRIST**  
(DEEMED TO BE UNIVERSITY)  
B A N G A L O R E • I N D I A

## ***Certificate***

*This is to certify that ASHVATH SURESH BABU PIRIYA has successfully completed the record work for Computer Programming –CS134P in partial fulfillment for the award of Bachelor of Technology in during the year 2021-2022.*

**Dr. K. Balachandran**

**HEAD OF DEPARTMENT**

**FACULTY- IN CHARGE**

**EXAMINER 1:**

**EXAMINER 2:**

Name : Ashvath S.P

Register No. : 2162014

Examination Center :

Date of Examination :

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**SEQUENTIAL PROGRAMMING****PROBLEM GIVEN:**

Write a program to store the information related to the name of the vehicle, cost of vehicle, variant of the vehicle, color, # of vehicles available, booking period, Name of the customers booked the vehicle, booking id.

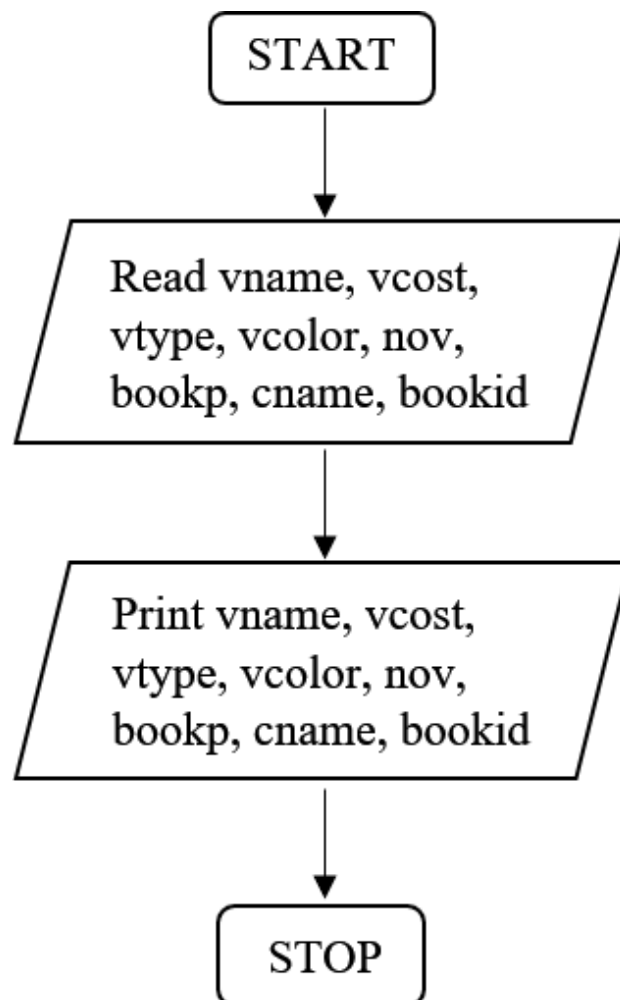
**ALGORITHM:**

Step-1: START

Step-2: Read vname, vcost, vtype, vcolor, nov, bookp, cname and bookid.

Step-3: Display vname, vcost, vtype, vcolor, nov, bookp, cname and bookid.

Step-4: STOP

**FLOWCHART:**

## PROGRAM:

```
#include <stdio.h>

void main() {

    char vname[20];
    float vcost;
    char vtype[20];
    char
    vcolor[10];
    int nov;
    int bookp;
    char
    cname[20]; int
    bookid;

    printf("Enter name of the vehicle: ");
    scanf("%s", &vname);

    printf("Enter cost of the vehicle: ");
    scanf("%f", &vcost);

    printf("Enter variant of the vehicle: ");
    scanf("%s", &vtype);

    printf("Enter colour of the vehicle: ");
    scanf("%s", &vcolor);

    printf("Enter number of vehicles available: ");
    scanf("%d", &nov);

    printf("Enter booking period: ");
    scanf("%d", &bookp);

    printf("Enter name of the customer: ");
    scanf("%s", &cname);

    printf("Enter booking ID: ");
    scanf("%d", &bookid);

    printf("\n-----DETAILS ----- \n");
    printf("Name of the vehicle: %s\n",
    vname); printf("Cost: %f\n", vcost);
    printf("Variant: %s\n", vtype);
    printf("Colour: %s\n", vcolor);
    printf("Number of vehicles available: %d\n",
    nov); printf("Booking period: %d\n", bookp);
    printf("Name of the customer: %s\n", cname);
    printf("Booking ID: %d\n", bookid);
}
```

## OUTPUT:

```
Microsoft Visual Studio Debug Console

Enter name of the vehicle: Bolero
Enter cost of the vehicle: 961625.5
Enter variant of the vehicle: RWD
Enter colour of the vehicle: White
Enter number of vehicles available: 122
Enter booking period: 5
Enter name of the customer: Ashvath
Enter booking ID: 665231

-----DETAILS-----
Name of the vehicle: Bolero
Cost: 961625.500000
Variant: RWD
Colour: White
Number of vehicles available: 122
Booking period: 5
Name of the customer: Ashvath
Booking ID: 665231

C:\Users\ashva\source\repos\Experiment1\Debug\Experiment1
.exe (process 13948) exited with code 0.
To automatically close the console when debugging stops,
enable Tools->Options->Debugging->Automatically close the
console when debugging stops.
Press any key to close this window . . .
```

## **TERNARY OPERATOR AND IF-ELSE STATEMENT**

### **PROBLEM GIVEN:**

Extend your previous program and implement the ternary operator and if-else. Choose your own conditions for the given problem.

### **ALGORITHM:**

Step 1: Start

Step 2: Read vname, vcost, vtype, vcolor, nov, bookp, cname and bookid.

Step 3: Print vname, vcost, vtype and vcolor.

Step 4: if (nov > 0)

    Print number of vehicles available.

    else

        Print ("Vehicle not available")

Step 5: if (bookp == 1)

    Print ("Booking: Open")

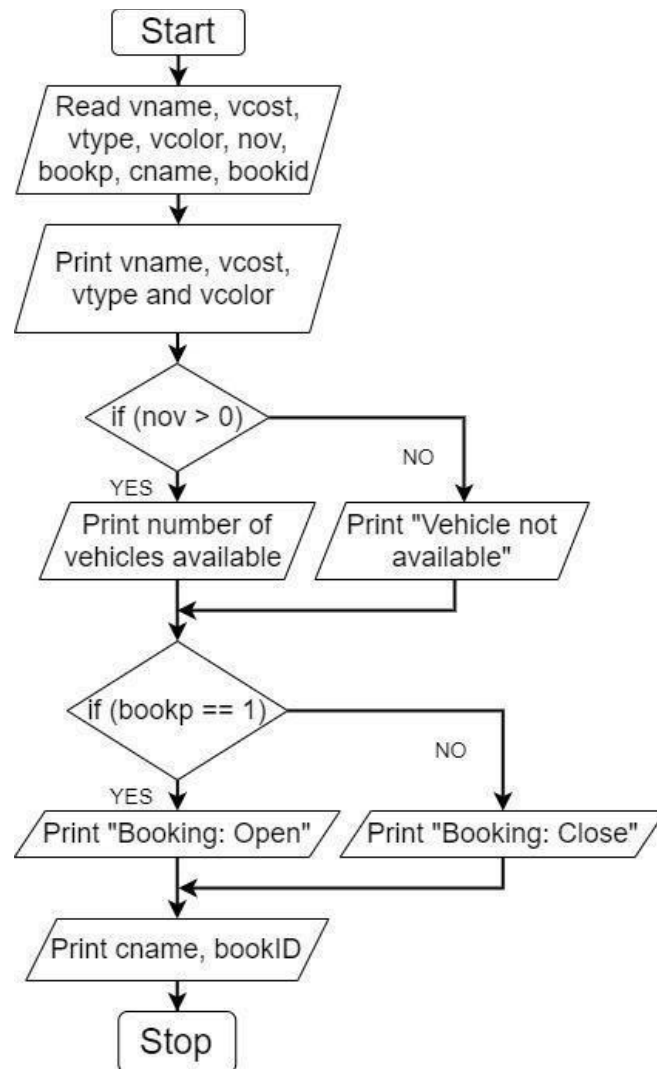
    else

        Print ("Booking: Close")

Step 6: Print cname and bookid.

Step 7: Stop

### **FLOWCHART:**





## PROGRAM:

```
#include <stdio.h>

void main() {
    char vname[20];
    float vcost;
    char vtype[10];
    char
vcolor[10]; int
nov;
    int bookp;
    char cname[20];
    int bookid;

    printf("Enter name of the vehicle: ");
    scanf("%s", &vname);
    printf("Enter cost of the vehicle: ");
    scanf("%f", &vcost);
    printf("Enter variant of the vehicle: ");
    scanf("%s", &vtype);
    printf("Enter colour of the vehicle: ");
    scanf("%s", &vcolor);
    printf("Enter number of vehicles available:
"); scanf("%d", &nov);
    printf("Enter booking period(open-1, closed-0): ");
    scanf("%d", &bookp);
    printf("Enter name of the customer: ");
    scanf("%s", &cname);
    printf("Enter booking ID:
"); scanf("%d", &bookid);

    printf("\n-----DETAILS -----\\n");
    printf("Name of the vehicle: %s\\n",
vname); printf("Cost: %f\\n", vcost);
    printf("Variant: %s\\n", vtype);
    printf("Colour: %s\\n", vcolor);

    (nov > 0) ? printf("No of vehicles available: %d\\n", nov)
: printf("Vehicle not available\\n");

    if (bookp == 1) {
        printf("Booking:
Open\\n");
    }
    else {
        printf("Booking: Close\\n");
    }

    printf("Name of the customer: %s\\n", cname);
    printf("Booking ID: %d\\n", bookid);
}
```

## OUTPUT:

```
Microsoft Visual Studio Debug Console

Enter name of the vehicle: Innova
Enter cost of the vehicle: 1265489.5
Enter variant of the vehicle: MUV
Enter colour of the vehicle: White
Enter number of vehicles available: 59
Enter booking period(open-1, closed-0): 0
Enter name of the customer: Ashvath
Enter booking ID: 5435568

-----DETAILS-----
Name of the vehicle: Innova
Cost: 1265489.500000
Variant: MUV
Colour: White
No of vehicles available: 59
Booking: Close
Name of the customer: Ashvath
Booking ID: 5435568

C:\Users\ashva\source\repos\Experiment1.5\Debug\Experiment1.5.exe
(process 25148) exited with code 0.
To automatically close the console when debugging stops, enable
Tools->Options->Debugging->Automatically close the console when
debugging stops.
Press any key to close this window . . .
```

**DECISION MAKING USING ELSE IF LADDER****PROBLEM GIVEN:**

Write a program to generate an invoice for the vehicle. 1. Depending on the variant of the vehicle the user selects the rates should vary. 2. If the person works for the defense or is ex-defense 10% discount is applicable.

**ALGORITHM:**

Step 1: Start

Step 2: Read vname, vtype, vcost, vcolor, nov, bookp, cname, bookid, defenc and dcost.

Step 3: Print cname, bookid, and vname.

Step 4: if (vtype == 0)

    Print ("Enter cost of the Hatchback (4L - 8L): ")

    else if (vtype == 1)

        Print ("Enter cost of the Sedan (8L - 11L): ")

    else if (vtype == 2)

        Print ("Enter cost of the SUV (13L - 40L): ")

    else if (vtype == 3)

        Print ("Enter cost of the MUV (5L - 25L): ")

    else

        Print ("Invalid Input!!")

Step 5: if (vtype == 0)

    Print ("Variant: Hatchback")

    else if (vtype == 1)

        Print ("Variant: Sedan")

    else if (vtype == 2)

        Print ("Variant: SUV")

    else if (vtype == 3)

        Print ("Variant: MUV")

    else

        Print ("Invalid Input!!")

Step 6: Print vcolor.

Step 7: if (dfenc == 0 || dfenc == 1)

    dcost = vcost - (vcost \* 0.1f)

    Print dcost

    else

        Print vcost

Step 8: if (nov > 0)

    Print number of vehicles available

    else

        Print ("Vehicle not available")

Step 9: if (bookp == 1)

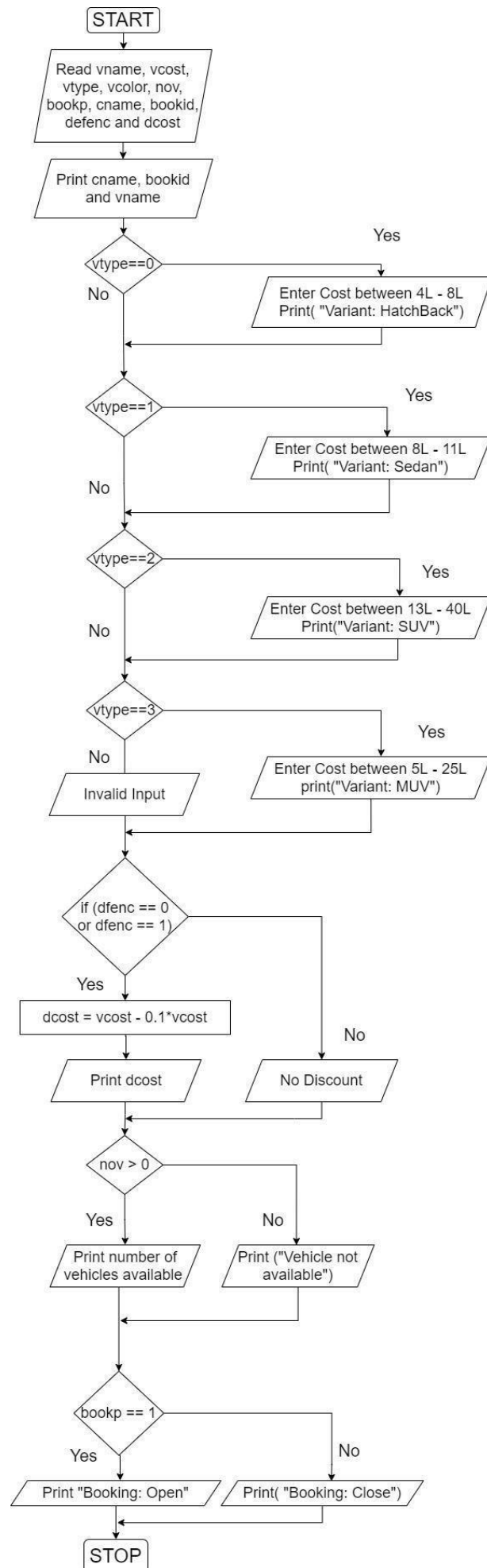
    Print ("Booking: Open")

    else

        Print ("Booking: Close")

Step 10: Stop

## FLOWCHART:



## PROGRAM:

```
//Automobile Management-Ex.2a
#include <stdio.h>
enum variants { Hatchback, Sedan, SUV, MUV };
enum defence { defence, exdefence };
int main() {
    //Get the details of the car and customer
    char vname[20], vcolor[10], cname[20];
    enum variants vtype;
    enum defence dfenc;
    float vcost, dcost;
    int nov, bookp, bookid;
    //Get the details from user
    printf("Enter name of the vehicle: ");
    scanf("%s", &vname);
    printf("Variant of the vehicle:\n(a) Hatchback\n(b) Sedan\n(c) SUV\n(d) MUV\n");
    printf("Choose Variant (0, 1, 2, 3): ");
    scanf("%d", &vtype);
    //Check the type of vehicle for cost of the vehicle
    if (vtype == 0) {
        printf("Enter cost of the Hatchback (4L - 8L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 1) {
        printf("Enter cost of the Sedan (8L - 11L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 2) {
        printf("Enter cost of the SUV (13L - 40L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 3) {
        printf("Enter cost of the MUV (5L - 25L): ");
        scanf("%f", &vcost);
    }
    else {
        printf("Invalid Input!!\n");
    }
    printf("Enter colour of the vehicle: ");
    scanf("%s", &vcolor);
    printf("Enter number of vehicles available: ");
    scanf("%d", &nov);
    printf("Enter booking period(open-1, closed-0): ");
    scanf("%d", &bookp);
    printf("Enter name of the customer: ");
    scanf("%s", &cname);
    printf("Occupation:\n");
    printf("(a) Defence worker\n(b) Ex-defence worker\n(c) Neither\n");
    printf("Choose Occupation(0, 1, 2): ");
    scanf("%d", &dfenc);
    printf("Enter booking ID: ");
    scanf("%d", &bookid);
    //Print Invoice
    printf("\n\t-----INVOICE ----- \n");
    printf("\tName of the customer: %s\n", cname);
    printf("\tBooking ID: %d\n", bookid);
    printf("\tName of the vehicle: %s\n", vname);
    //Check the type of vehicle for Invoice
    if (vtype == 0) {
        printf("\tVariant: Hatchback\n");
    }
    else if (vtype == 1) {
        printf("\tVariant: Sedan\n");
    }
    else if (vtype == 2) {
```

```
    printf("\tVariant: SUV\n");  
}
```

```

else if (vtype == 3) {
    printf("\tVariant: MUV\n");
}
else {
    printf("\tInvalid Input!!\n");
}
printf("\tColour: %s\n", vcolor);
//Check occupation for discount
if (dfenc == 0 || dfenc == 1) {
    dcost = vcost - (vcost * 0.1f);
    printf("\tCost after discount: %f\n", dcost);
}
else {
    printf("\tCost: %f\n", vcost);
}
//Check the number of vehicles available
(nov > 0) ? printf("\tNo of vehicles available: %d\n", nov)
: printf("\tVehicle not available\n");
//Check booking period
if (bookp == 1) {
    printf("\tBooking: Open\n");
}
else {
    printf("\tBooking: Close\n");
}
return 0;
}

```

## OUTPUT:

```

Microsoft Visual Studio Debug Console
Enter name of the vehicle: Baleno
Variant of the vehicle:
(a) Hatchback
(b) Sedan
(c) SUV
(d) MUV
Choose Variant (0, 1, 2, 3): 0
Enter cost of the Hatchback (4L - 8L): 597559.5
Enter colour of the vehicle: Blue
Enter number of vehicles available: 26
Enter booking period(open-1, closed-0): 1
Enter name of the customer: Ashvath
Occupation:
(a) Defence worker
(b) Ex-defence worker
(c) Neither
Choose Occupation(0, 1, 2): 1
Enter booking ID: 5451253

-----INVOICE-----
Name of the customer: Ashvath
Booking ID: 5451253
Name of the vehicle: Baleno
Variant: Hatchback
Colour: Blue
Cost after discount: 537803.562500
No of vehicles available: 26
Booking: Open

C:\Users\ashva\source\repos\Experiment2a\Debug\Experiment2a.exe (process 23756)
exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->
Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .

```

**DECISION MAKING USING SWITCH CASE****PROBLEM GIVEN:**

Write a program to display a menu to the Customer using a switch case for the following - 1. Customer Profile 2. Discount calculation. 3. e-quote. Extend the previous program to implement the program.

**ALGORITHM:**

Step 1: Start

Step 2: Read vname, vtype, vcost, vcolor, nov, bookp, cname, bookid, defenc, engine, dcost, and gendr

Step 3: Print cname, bookid, and vname.

Step 4: if (vtype == 0)

Print ("Enter cost of the Hatchback (4L - 8L): ")

else if (vtype == 1)

Print ("Enter cost of the Sedan (8L - 11L): ")

else if (vtype == 2)

Print ("Enter cost of the SUV (13L - 40L): ")

else if (vtype == 3)

Print ("Enter cost of the MUV (5L - 25L): ")

else

Print ("Invalid Input!!")

Step 5: if (vtype == 0)

Print ("Variant: Hatchback")

else if (vtype == 1)

Print ("Variant: Sedan")

else if (vtype == 2)

Print ("Variant: SUV")

else if (vtype == 3)

Print ("Variant: MUV")

else

Print ("Invalid Input!!")

Step 6: Print vcolor.

Step 7: if (dfenc == 0 || dfenc == 1)

dcost = vcost - (vcost \* 0.1f)

Print dcost

else

Print vcost

Step 8: if (nov > 0)

Print number of vehicles available

else

Print ("Vehicle not available")

Step 9: if (bookp == 1)

Print ("Booking: Open")

else

Print ("Booking: Close")

Step 10: Read choice

Step 11: Switch(choice)

case 1:

Print the customer profile

case 2:

if (dfenc == 0 or dfenc == 1)

Print the discount calculation

else

Print ("Discount Not Available")

case 3:

Print E-Quote

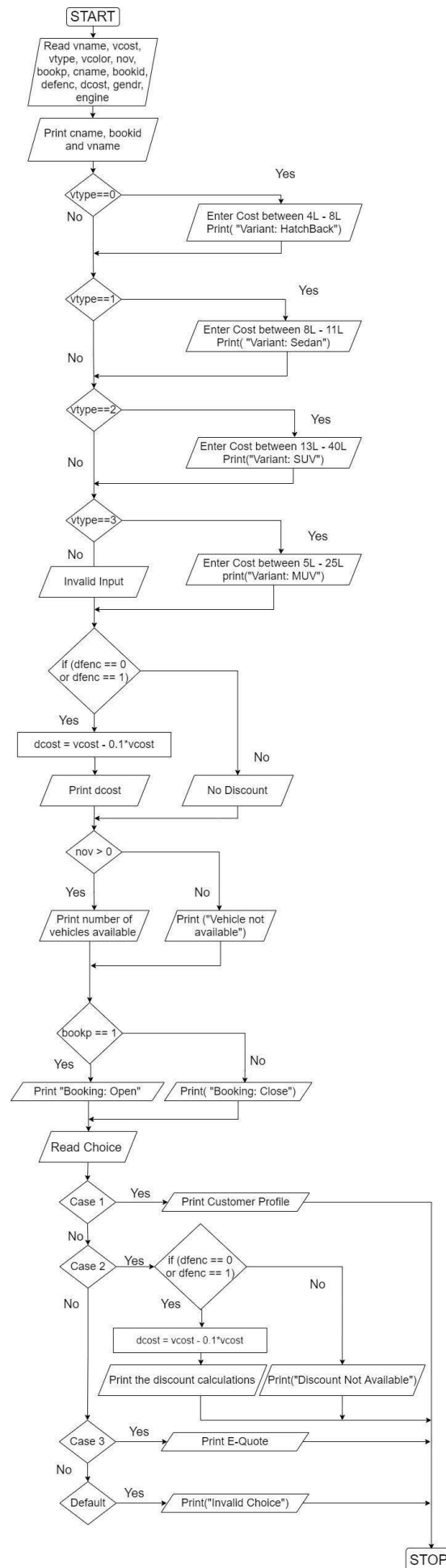
default:



Print ("Invalid Choice")

Step 12: Stop

## FLOWCHART:



## PROGRAM:

```
//Automobile Management-Ex.2b
#include <stdio.h>
enum variants { Hatchback, Sedan, SUV, MUV };
enum defence { defence, exdefence };
int main() {
    //Get the details of the car and customer
    char vname[20], vcolor[10], cname[20], gendr[20], engine[20];
    enum variants vtype;
    enum defence dfenc;
    float vcost, dcost;
    int nov, bookp, bookid, choice;
    //Get the details from the user
    printf("Enter name of the vehicle: ");
    scanf("%s", &vname);
    printf("Variant of the vehicle:\n(a) Hatchback\n(b) Sedan\n(c) SUV\n(d) MUV\n");
    printf("Choose Variant (0, 1, 2, 3): ");
    scanf("%d", &vtype);
    //Check the type of vehicle for cost of the vehicle
    if (vtype == 0) {
        printf("Enter Cost of the Hatchback (4L - 8L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 1) {
        printf("Enter Cost of the Sedan (8L - 11L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 2) {
        printf("Enter Cost of the SUV (13L - 40L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 3) {
        printf("Enter Cost of the MUV (5L - 25L): ");
        scanf("%f", &vcost);
    }
    else {
        printf("Invalid Input!!\n");
    }
    printf("Enter colour of the vehicle: ");
    scanf("%s", &vcolor);
    printf("Enter number of vehicles available: ");
    scanf("%d", &nov);
    printf("Enter booking period(open-1, closed-0): ");
    scanf("%d", &bookp);
    printf("Enter name of the customer: ");
    scanf("%s", &cname);
    printf("Enter gender: ");
    scanf("%s", &gendr);
    printf("Occupation:\n");
    printf("(a) Defence worker\n(b) Ex-defence worker\n(c) Neither\n");
    printf("Choose Occupation(0, 1, 2): ");
    scanf("%d", &dfenc);
    printf("Enter booking ID: ");
    scanf("%d", &bookid);
    //Print Invoice
    printf("\n\t-----INVOICE ----- \n");
    printf("\tName of the customer: %s\n", cname);
    printf("\tBooking ID: %d\n", bookid);
    printf("\tName of the vehicle: %s\n", vname);
    //Check the type of vehicle for Invoice
    if (vtype == 0) {
        printf("\tVariant: Hatchback\n");
    }
```

```
}  
else if (vtype == 1) {  
    printf("\tVariant: Sedan\n");  
}
```

```

}
else if (vtype == 2) {
    printf("\tVariant: SUV\n");
}
else if (vtype == 3) {
    printf("\tVariant: MUV\n");
}
else {
    printf("\tInvalid Input!!\n");
}
printf("\tColour: %s\n", vcolor);
//Check occupation for discount
if (dfenc == 0 || dfenc == 1) {
    dcost = vcost - (vcost * 0.1f);
    printf("\tCost after discount: %f\n", dcost);
}
else {
    printf("\tCost: %f\n", vcost);
}
//Check the number of vehicles available
(nov > 0) ? printf("\tNo of vehicles available: %d\n", nov)
: printf("\tVehicle not available\n");
//Check booking period
if (bookp == 1) {
    printf("\tBooking: Open\n");
}
else {
    printf("\tBooking: Close\n");
}
//Print Menu
printf("\n.....MENU.....\n");
printf("1.Customer Profile\n2.Discount Calculation\n3.Print E-Quote\n");
printf("Enter choice: ");
scanf("%d", &choice);
switch (choice) {
case 1:
    //Print Customer Details
    printf("\n1.Customer Profile\n");
    printf("\tName: %s\n", cname);
    printf("\tGender: %s\n", gendr);
    printf("\tBooking ID: %d\n", bookid);
    if (dfenc == 0) {
        printf("\tOccupation: Defence Worker\n");
    }
    else if (dfenc == 1) {
        printf("\tOccupation: Ex-Defence Worker\n");
    }
    else {
        printf("\tAbout: Buyer\n");
    }
    break;
case 2:
    //Print Discount Details
    printf("\n2.Discount Calculation\n");
    if (dfenc == 0 || dfenc == 1) {
        printf("\tTotal Cost: %f\n", vcost);
        printf("\tDiscount Amount: %f\n", vcost * 0.1f);
        dcost = vcost - (vcost * 0.1f);
        printf("\tCost after discount: %f\n", dcost);
    }
    else {
        printf("\tDiscount not available.\n");
        printf("\tCost of the vehicle: %f\n", vcost);
    }
}

```

```
break;  
case 3:  
    //Print E-Quote
```

```

        printf("\n3.E-Quote\n");
        printf("\tManufacturer of Engine: ");
        scanf("%s", &engine);
        printf("\n\tPart Name: Engine\n\tCost: 80000\n\tManufacturer: %s\n\n", engine);
        printf("\tPart Name: Brake system\n\tCost: 30000\n\tManufacturer: India Brakes
LTD.\n\n");
        printf("\tPart Name: Chasis\n\tCost: 120000\n\tManufacturer: Krit Chasis
Pvt.LTD\n");
        break;
    default:
        printf("\nInvalid choice\n");
        exit(0);
    }
    return 0;
}

```

## OUTPUT:

```

Microsoft Visual Studio Debug Console
Enter name of the vehicle: Dzire
Variant of the vehicle:
(a) Hatchback
(b) Sedan
(c) SUV
(d) MUV
Choose Variant (0, 1, 2, 3): 1
Enter Cost of the Sedan (8L - 11L): 907659.25
Enter colour of the vehicle: Black
Enter number of vehicles available: 0
Enter booking period(open-1, closed-0): 0
Enter name of the customer: Ashvath
Enter gender: Male
Occupation:
(a) Defence worker
(b) Ex-defence worker
(c) Neither
Choose Occupation(0, 1, 2): 0
Enter booking ID: 3246545

-----INVOICE-----
Name of the customer: Ashvath
Booking ID: 3246545
Name of the vehicle: Dzire
Variant: Sedan
Colour: Black
Cost after discount: 816893.312500
Vehicle not available
Booking: Close

-----MENU-----
1.Customer Profile
2.Discount Calculation
3.Print E-Quote
Enter choice: 1

1.Customer Profile
Name: Ashvath
Gender: Male
Booking ID: 3246545
Occupation: Defence Worker

C:\Users\ashva\source\repos\Experiment2b\Debug\Experiment2b.exe (process 20656) exited with
code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->
Automatically close the console when debugging stops.
Press any key to close this window . . .

```

## **LOOPING**

**PROBLEM GIVEN:**

Write a program to include an Exit Option by the user. The menu should be displayed, only if the user selects option 4. Exit should the loop run. Use do-while to implement the same. Extend the previous program to implement the program.

**ALGORITHM:**

Step 1: Start

Step 2: Read vname, vcolor, nov, bookp, cname, bookid, defenc, dcost, genr and engine.

Step 3: Print cname, bookid, and vname.

Step 4: Read vtype (Hatchback, Sedan, SUV, MUV) and vcost with respect to the vtype.

Step 5: Print vtype and vcost.

Step 6: Print vcolor.

Step 7: Check if the customer is working in defense or an ex-defense person. If yes, apply 10% discount, else, do not apply 10% discount.

Step 8: Check if the number of vehicles is greater than 0. If yes, print the number of vehicles available, else, print "Vehicle not available".

Step 9: Check if the booking period is open. If yes, print "Booking: Open", else, print "Booking: Close".

Step 10: Implement a do while loop in the following switch case statement:

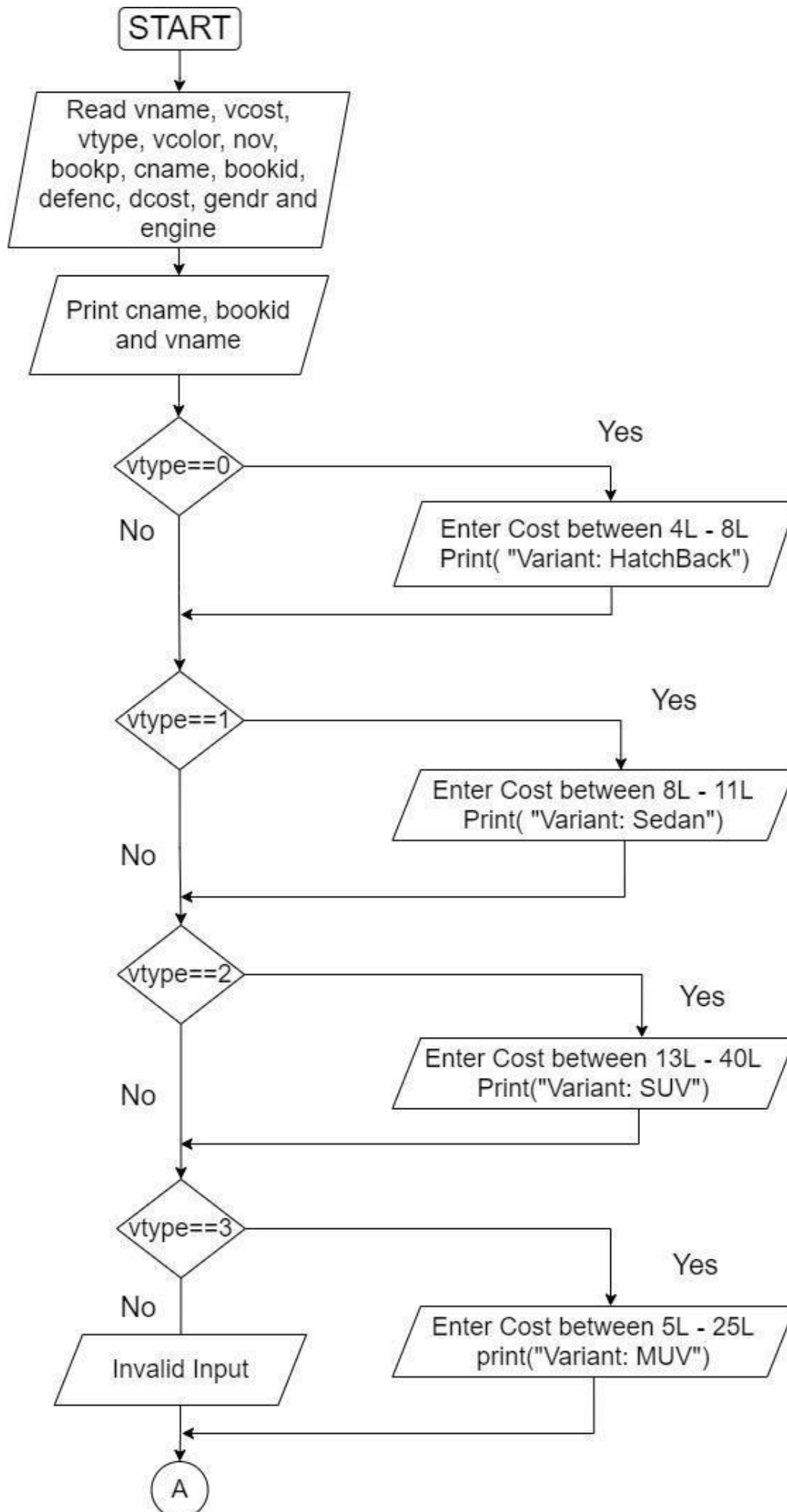
- Case 1: Print Customer Profile
- Case 2: Print Discount Calculation
- Case 3: Print E-Quote
- Case 4: Exit

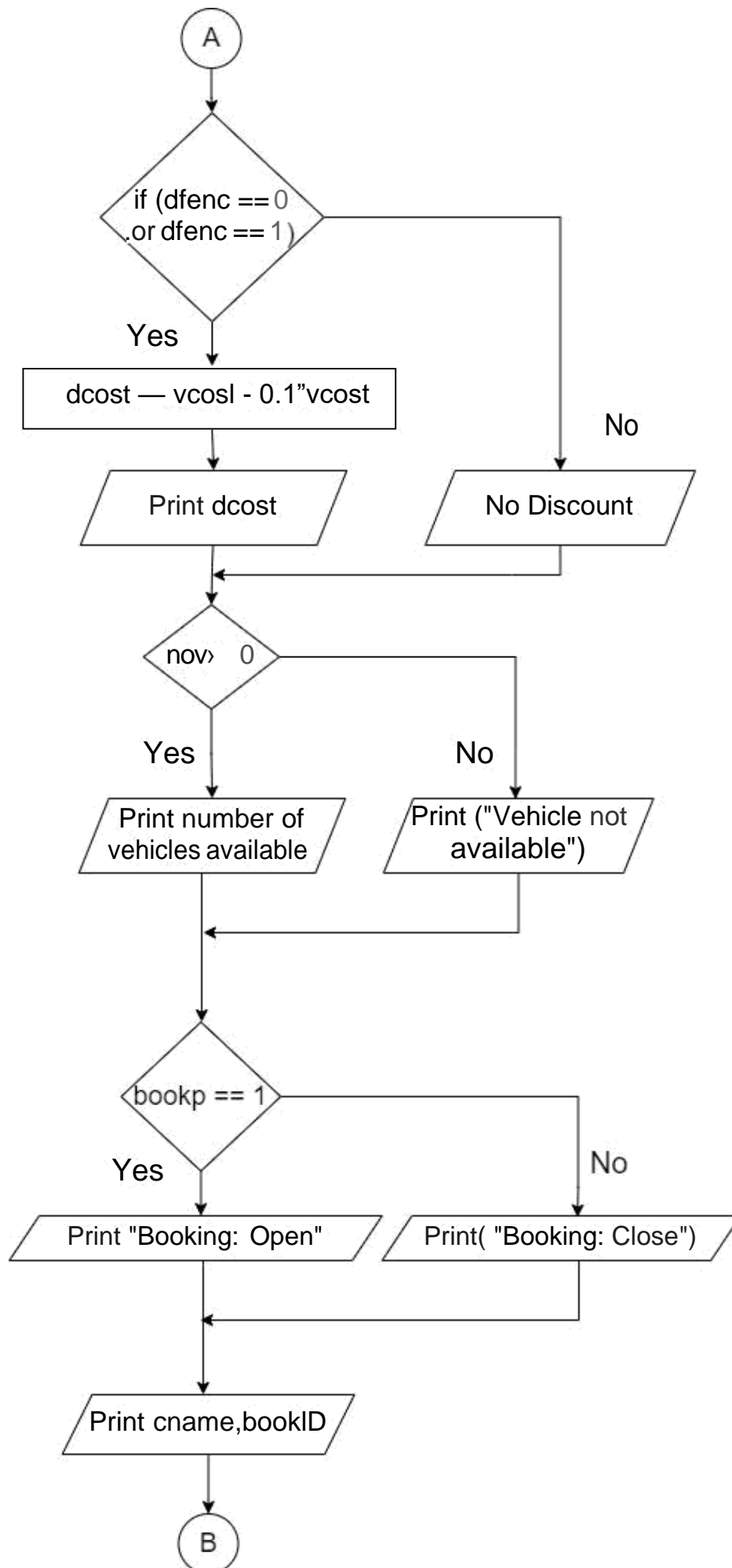
Step 11: Read choice and perform its respective case. The loop continues until the choice is not equal to 4.

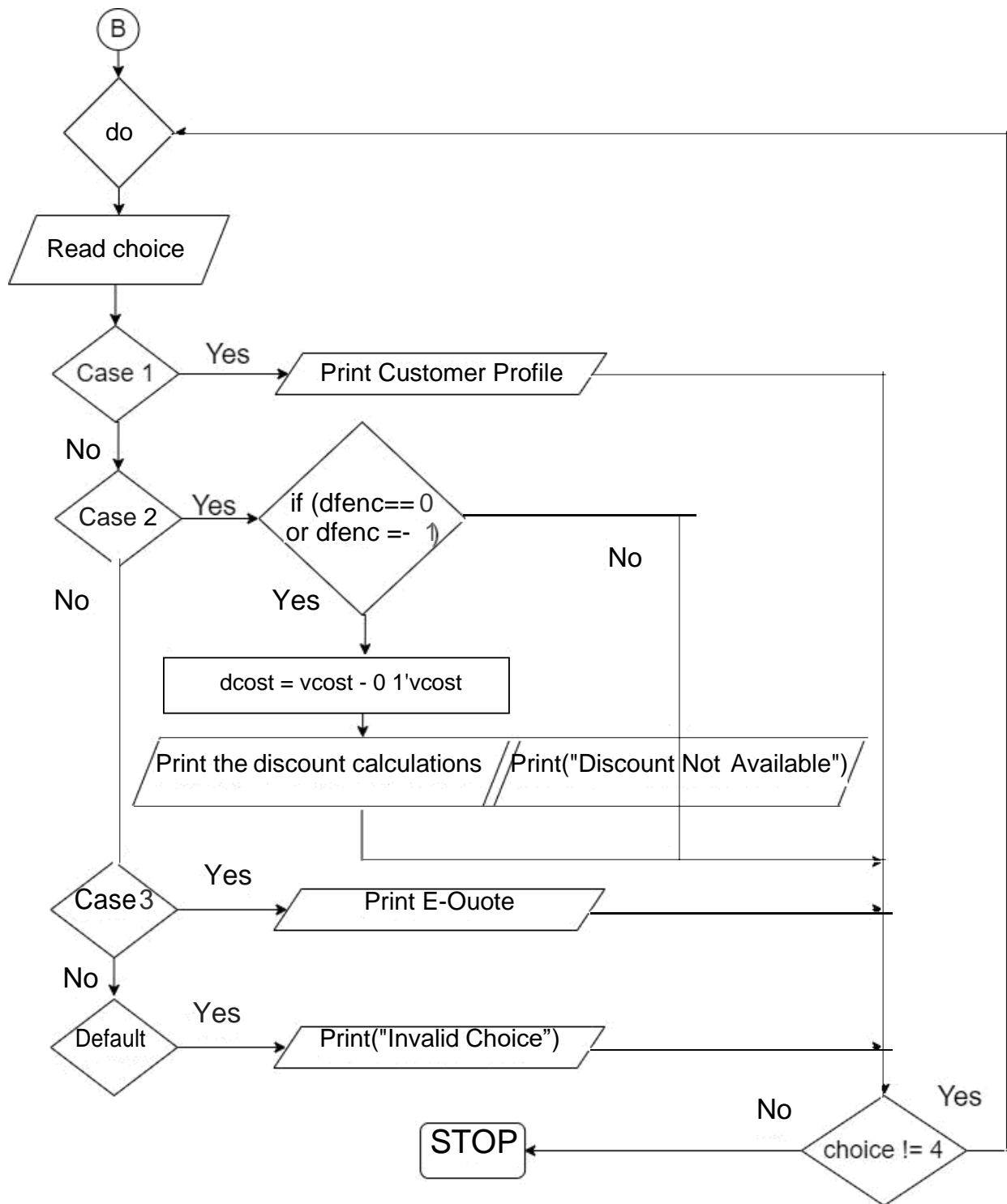
Step 12: Stop



**FLOWCHART:**







## PROGRAM:

```
//Automobile Management-Ex.3
#include <stdio.h>
enum variants { Hatchback, Sedan, SUV, MUV };
enum defence { defence, exdefence };
int main() {
    //Get the details of the car and customer
    char vname[20], vcolor[10], cname[20], gendr[20], engine[20];
    enum variants vtype;
    enum defence dfenc;
    float vcost, dcost;
    int nov, bookp, bookid, choice;
    //Get the details from the user
    printf("Enter name of the vehicle: ");
    scanf("%s", &vname);
    printf("Variant of the vehicle:\n(a) Hatchback\n(b) Sedan\n(c) SUV\n(d) MUV\n");
    printf("Choose Variant (0, 1, 2, 3): ");
    scanf("%d", &vtype);
    //Check the type of vehicle for cost of the vehicle
    if (vtype == 0) {
        printf("Enter Cost of the Hatchback (4L - 8L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 1) {
        printf("Enter Cost of the Sedan (8L - 11L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 2) {
        printf("Enter Cost of the SUV (13L - 40L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 3) {
        printf("Enter Cost of the MUV (5L - 25L): ");
        scanf("%f", &vcost);
    }
    else {
        printf("Invalid Input!!\n");
    }
    printf("Enter colour of the vehicle: ");
    scanf("%s", &vcolor);
    printf("Enter number of vehicles available: ");
    scanf("%d", &nov);
    printf("Enter booking period(open-1, close-0): ");
    scanf("%d", &bookp);
    printf("Enter name of the customer: ");
    scanf("%s", &cname);
    printf("Enter gender: ");
    scanf("%s", &gendr);
    printf("Occupation:\n");
    printf("(a) Defence worker\n(b) Ex-defence worker\n(c) Neither\n");
    printf("Choose Occupation(0, 1, 2): ");
    scanf("%d", &dfenc);
    printf("Enter booking ID: ");
    scanf("%d", &bookid);
    //Print Invoice
    printf("\n\t-----INVOICE ----- \n");
    printf("\tName of the customer: %s\n", cname);
    printf("\tBooking ID: %d\n", bookid);
    printf("\tName of the vehicle: %s\n", vname);
    //Check the type of vehicle for Invoice
    if (vtype == 0) {
        printf("\tVariant: Hatchback\n");
    }
```

```
}  
else if (vtype == 1) {  
    printf("\tVariant: Sedan\n");  
}
```

```

}
else if (vtype == 2) {
    printf("\tVariant: SUV\n");
}
else if (vtype == 3) {
    printf("\tVariant: MUV\n");
}
else {
    printf("\tInvalid Input!!\n");
}
printf("\tColour: %s\n", vcolor);
//Check occupation for discount
if (dfenc == 0 || dfenc == 1) {
    dcost = vcost - (vcost * 0.1f);
    printf("\tCost after discount: %f\n", dcost);
}
else {
    printf("\tCost: %f\n", vcost);
}
//Check the number of vehicles available
(nov > 0) ? printf("\tNo of vehicles available: %d\n", nov)
: printf("\tVehicle not available\n");
//Check booking period
if (bookp == 1) {
    printf("\tBooking: Open\n");
}
else {
    printf("\tBooking: Close\n");
}
//Print Menu
do
{
    printf("\n.....MENU.....\n"); printf("1.Customer
Profile\n2.Discount Calculation\n3.Print E-
Quote\n4.Exit\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);
    switch (choice) {
        case 1:
            //Print Customer Details
            printf("\n1.Customer Profile\n");
            printf("\tName: %s\n", cname);
            printf("\tGender: %s\n", gendr);
            printf("\tBooking ID: %d\n", bookid);
            if (dfenc == 0) {
                printf("\tOccupation: Defence Worker\n");
            }
            else if (dfenc == 1) {
                printf("\tOccupation: Ex-Defence Worker\n");
            }
            else {
                printf("\tAbout: Buyer\n");
            }
            break;
        case 2:
            //Print Discount Details
            printf("\n2.Discount Calculation\n");
            if (dfenc == 0 || dfenc == 1) {
                printf("\tTotal Cost: %f\n", vcost);
                printf("\tDiscount Amount: %f\n", vcost * 0.1f);
                dcost = vcost - (vcost * 0.1f);
                printf("\tCost after discount: %f\n", dcost);
            }
            else {

```

```
printf("\tDiscount not available.\n");  
printf(" \tCost of the vehicle: %f\n", vcost);  
}
```

```

        break;
    case 3:
        //Print E-Quote
        printf("\n3.E-Quote\n");
        printf("\tManufacturer of Engine: ");
        scanf("%s", &engine);
        printf("\n\tPart Name: Engine\n\tCost: 80000\n\tManufacturer: %s\n\n",
engine);
        printf("\tPart Name: Brake system\n\tCost: 30000\n\tManufacturer: India
Brakes LTD.\n\n");
        printf("\tPart Name: Chasis\n\tCost: 120000\n\tManufacturer: Krit Chasis
Pvt.LTD\n");
        break;
    case 4:
        break;
    default:
        printf("\nInvalid choice\n");
        exit(0);
    }
} while (choice != 4);
return 0;
}

```

## OUTPUT:

```

C:\Users\ashva\source\repos\Exp3\exp3code.exe
Enter name of the vehicle: Ertiga
Variant of the vehicle:
(a) Hatchback
(b) Sedan
(c) SUV
(d) MUV
Choose Variant (0, 1, 2, 3): 3
Enter Cost of the MUV (5L - 25L): 1069854.55
Enter colour of the vehicle: Maroon
Enter number of vehicles available: 1994
Enter booking period(open-1, close-0): 1
Enter name of the customer: Ashvath
Enter gender: Male
Occupation:
(a) Defence worker
(b) Ex-defence worker
(c) Neither
Choose Occupation(0, 1, 2): 1
Enter booking ID: 8754515

-----INVOICE-----
Name of the customer: Ashvath
Booking ID: 8754515
Name of the vehicle: Ertiga
Variant: MUV
Colour: Maroon
Cost after discount: 962869.062500
No of vehicles available: 1994
Booking: Open

```



-----MENU-----

- 1.Customer Profile
- 2.Discount Calculation
- 3.Print E-Quote
- 4.Exit

Enter your choice: 1

- 1.Customer Profile

Name: Ashvath  
Gender: Male  
Booking ID: 8754515  
Occupation: Ex-Defence Worker

-----MENU-----

- 1.Customer Profile
- 2.Discount Calculation
- 3.Print E-Quote
- 4.Exit

Enter your choice: 2

- 2.Discount Calculation

Total Cost: 1069854.500000  
Discount Amount: 106985.453125  
Cost after discount: 962869.062500

-----MENU-----

- 1.Customer Profile
- 2.Discount Calculation
- 3.Print E-Quote
- 4.Exit

Enter your choice: 3

- 3.E-Quote

Manufacturer of Engine: Toyota

Part Name: Engine  
Cost: 80000  
Manufacturer: Toyota

Part Name: Brake system  
Cost: 30000  
Manufacturer: India Brakes LTD.

Part Name: Chasis  
Cost: 120000  
Manufacturer: Krit Chasis Pvt.LTD

-----MENU-----

- 1.Customer Profile
- 2.Discount Calculation
- 3.Print E-Quote
- 4.Exit

Enter your choice: 4

Process exited after 64.91 seconds with return value 0  
Press any key to continue . . .

**NESTED LOOPING****PROBLEM GIVEN:**

Write a program in C to display the following pattern

10 9 8 7

6 5 4

3 2

1

**ALGORITHM:**

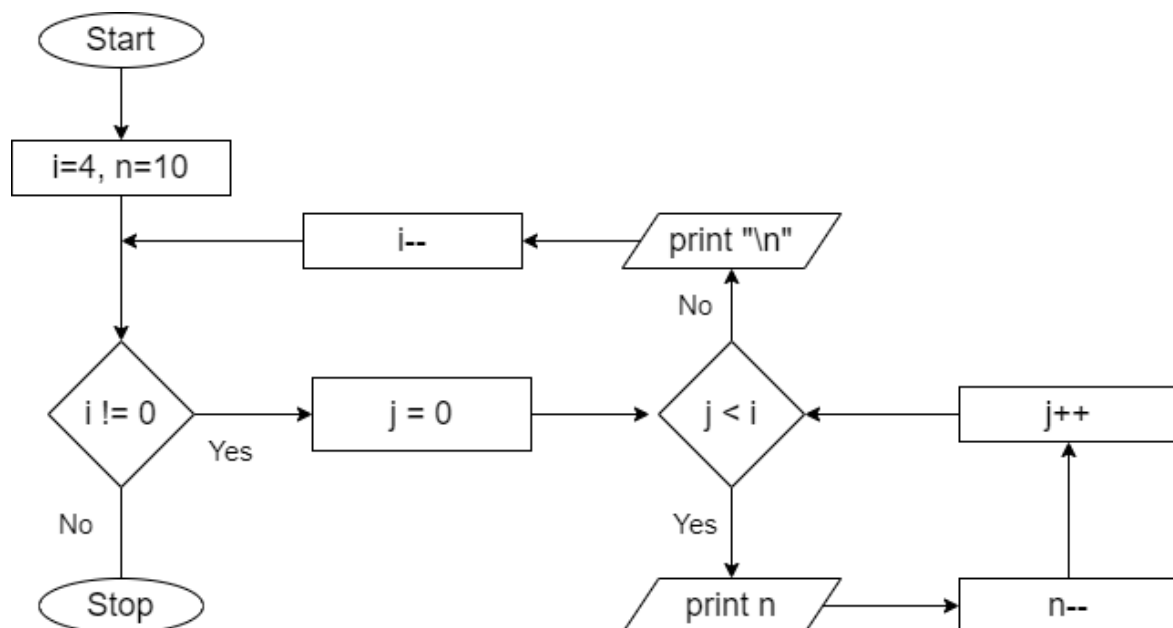
Step 1: Start

Step 2: Initialize  $i=4$ ,  $j$ , and  $n=10$ .

Step 3: Introduce an outer for loop, where it checks if  $i$  is not equal to 0. If yes, let  $j=0$ , else, End the program.

Step 4: Introduce an inner for loop where it checks if  $j$  is less than  $i$ . If yes, print  $n$ , post-decrement  $n$  and post-increment  $j$ , else, print “\n” and post-decrement  $i$ .

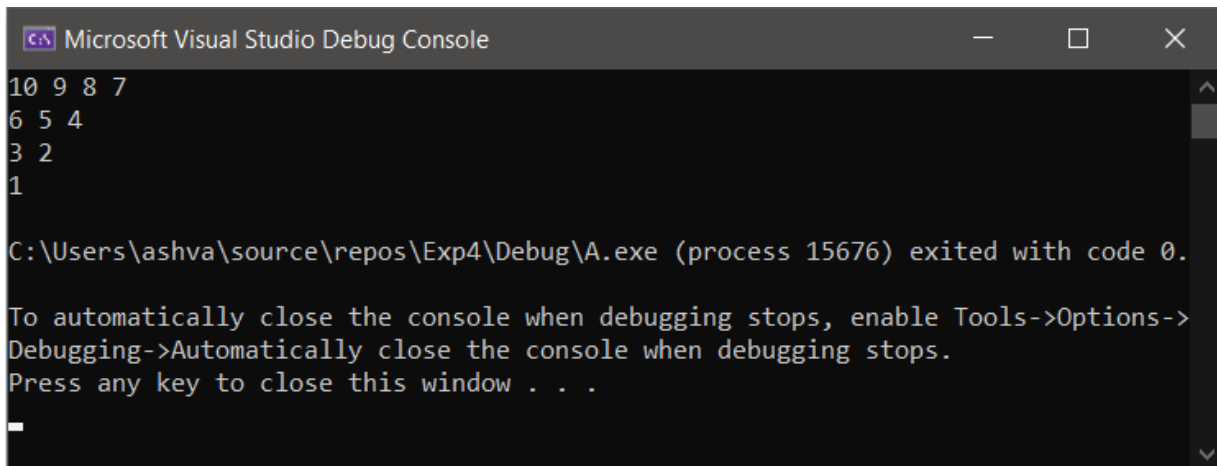
Step 5: Stop

**FLOWCHART:**

## PROGRAM:

```
//Exp 4 - Nested Looping
#include <stdio.h>
int main()
{
    int n, i, j;
    n = 10;
    for (i = 4; i != 0; i--) {
        for (j = 0; j < i; j++) {
            printf("%d ", n);
            n--;
        }
        printf("\n");
    }
}
```

## OUTPUT:



The screenshot shows the Microsoft Visual Studio Debug Console window. The output of the program is displayed as a series of numbers arranged in a descending staircase pattern: 10 9 8 7, 6 5 4, 3 2, and 1. Below the output, a message indicates that the process A.exe (process 15676) exited with code 0. Further instructions suggest enabling 'Tools->Options->Debugging->Automatically close the console when debugging stops' to automatically close the console. The window ends with the prompt 'Press any key to close this window . . .'. The console window has a title bar with the text 'Microsoft Visual Studio Debug Console' and standard window controls (minimize, maximize, close).

```
Microsoft Visual Studio Debug Console
10 9 8 7
6 5 4
3 2
1

C:\Users\ashva\source\repos\Exp4\Debug\A.exe (process 15676) exited with code 0.

To automatically close the console when debugging stops, enable Tools->Options->
Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

**Ex. No: 5**

**Date: 04-10-2021**

## **1D ARRAYS**

### **PROBLEM GIVEN:**

Write a program to store the data of customers and search for a given costumer by name or number and display details of customer.

### **ALGORITHM:**

Step 1: Start

Step 2: Declare i, j, fst, lst, mid, n, search, cid[100] and t.

Step 3: Read number of customers and Customer IDs.

Step 4: Introduce an outer for-loop, where  $i=0$ , it checks if  $i$  is lesser than  $n$ . If yes, let  $j=i+1$ , else, exit the loop.

Step 5: Introduce an inner for loop where it checks if  $j$  is less than  $n$ . If yes, check if  $cid[j]<cid[i]$  and post-increment  $j$ , else, post-increment  $i$  and repeat the outer for-loop.

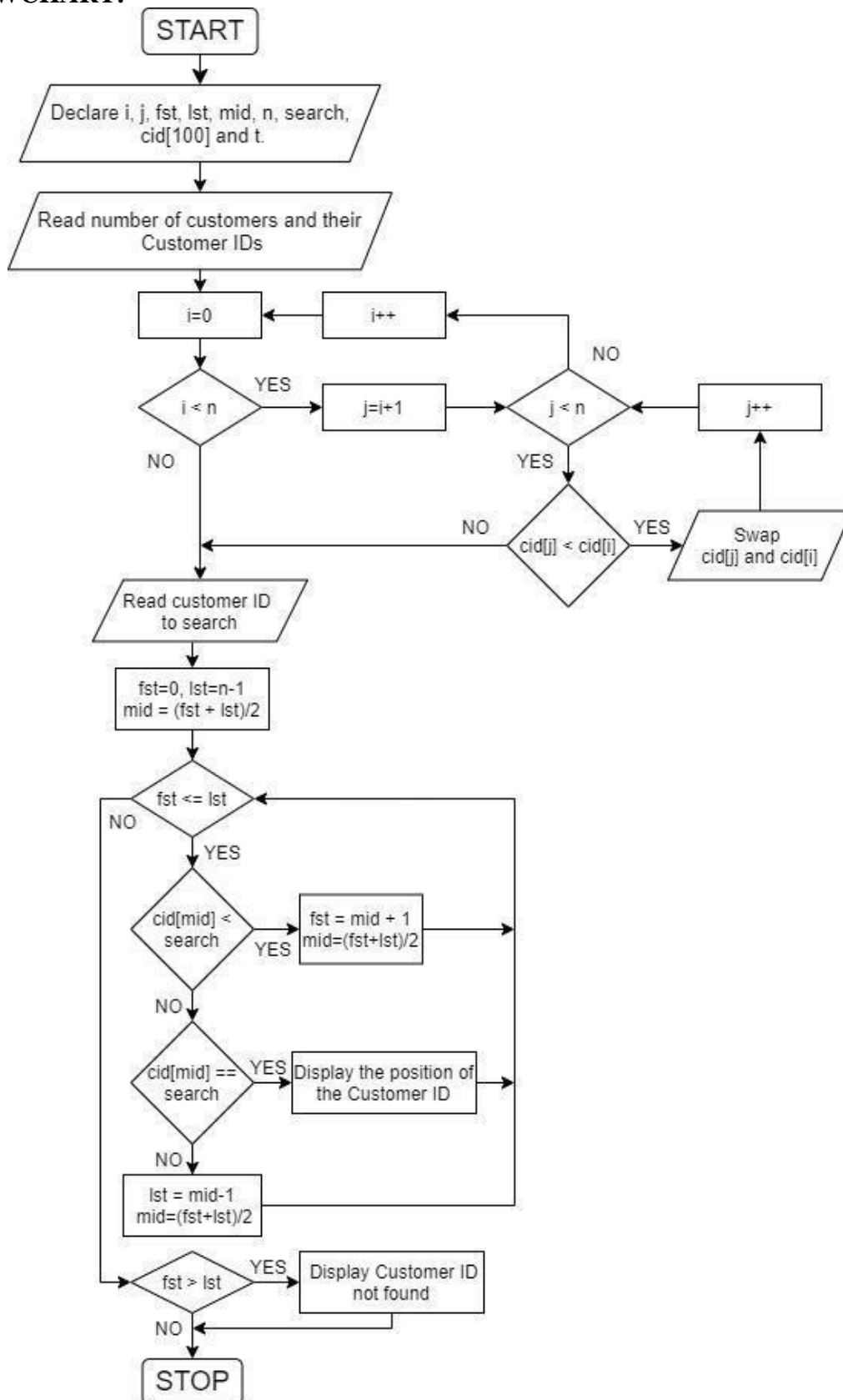
Step 6: If  $cid[j]<cid[i]$ , then  $t = cid[i]$ ,  $cid[i] = cid[j]$  and  $cid[j] = t$ . Else, Exit the loop.

Step 7: Read Customer ID to be searched and let  $fst=0$ ,  $lst=n-1$  and  $mid = (fst+lst)/2$ .

Step 8: Introduce a while loop that continues if  $fst \leq lst$ . In the loop, Check if  $cid[mid]$  is less than search. If yes,  $fst=mid+1$  and  $mid=(fst+lst)/2$ , else, Check if  $cid[mid]$  is equal to search. If yes, Display the position of the Customer ID, else,  $lst=mid-1$  and  $mid=(fst+lst)/2$ .

Step 9: Check if  $fst > lst$ . If yes, Display Customer ID not found.

## FLOWCHART:



## PROGRAM:

```
//Exp 5 - 1D Arrays
#include <stdio.h>
int main()
{
    int i, j, fst, lst, mid, n, search, cid[100], t;
    //Input values
    printf("Enter number of customers: ");
    scanf("%d", &n);
    printf("Enter %d Customer ID's:\n", n);
    for (i = 0; i < n; i++) {
        scanf("%d", &cid[i]);
    }
    //Binary Sort
    for (i = 0; i < n; i++) {
        for (j = i + 1; j < n; j++) {
            if (cid[j] < cid[i]) {
                t = cid[i];
                cid[i] = cid[j];
                cid[j] = t;
            }
        }
    }
    //Binary Search
    printf("Enter the Customer ID to search: ");
    scanf("%d", &search);
    fst = 0;
    lst = n - 1;
    mid = (fst + lst) / 2;
    printf("Middle term = %d\n", mid);
    while (fst <= lst) {
        if (cid[mid] < search) {
            fst = mid + 1;
        }
        else if (cid[mid] == search) {
            printf("%d found at location %d\n", search, mid + 1);
            break;
        }
        else {
            lst = mid - 1;
        }
        mid = (fst + lst) / 2;
    }
    if (fst > lst) {
        printf("%d not found\n", search);
    }
    return 0;
}
```

## OUTPUT:

```
Microsoft Visual Studio Debug Console

Enter number of customers: 8
Enter 8 Customer ID's:
7897943
4654686
1345484
9879876
8894654
2546461
3454848
6654862
Enter the Customer ID to search: 8894654
Middle term = 3
8894654 found at location 7

C:\Users\ashva\source\repos\Exp5\Debug\Exp5.exe (process 19280)
exited with code 0.
To automatically close the console when debugging stops, enable
Tools->Options->Debugging->Automatically close the console when
debugging stops.
Press any key to close this window . . .
```

**Ex. No: 6**

**Date: 01-11-2021**

## **2D ARRAYS**

### **PROBLEM GIVEN:**

Write a program to multiply 2 matrices and print the result matrix. Then print the even and odd elements of the result array

### **ALGORITHM:**

Step 1: Start

Step 2: Declare the variables a[10][10], b[10][10], ab[10][10], eve[100], od[100], integer r, c, i, j, k, e, o.

Step 3: Read r and c.

Step 4: Introduce a for-loop for entering elements in the matrix A.

Step 4: Introduce a for-loop for entering elements in the matrix B.

Step 5: Introduce a for-loop for multiplying matrix A and matrix B.

Step 6: Introduce a for-loop for printing the product AB.

Step 7: Let e=0 and o=0.

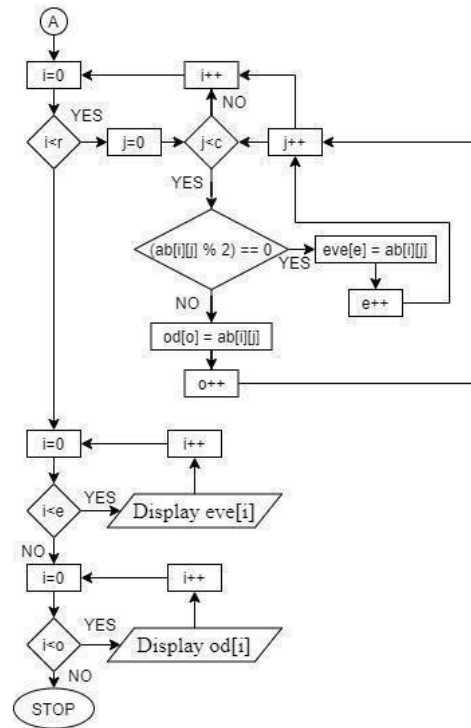
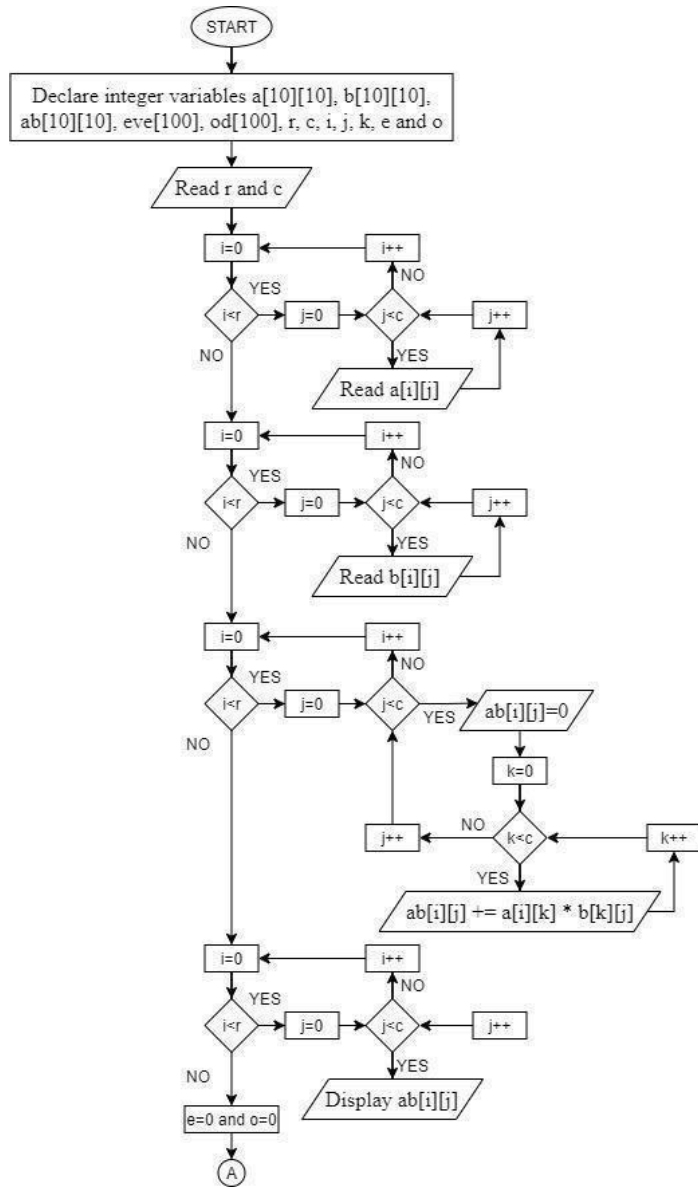
Step 8: Introduce a for-loop for checking whether the elements of the product AB are even or odd.

Step 9: Introduce a for-loop for printing the even numbers and odd numbers.

Step 10: Stop



## FLOWCHART:



## PROGRAM:

```
#include<stdio.h>
int main() {
    int a[10][10], b[10][10], ab[10][10], eve[100], od[100], r, c, i, j, k, e, o;
    printf("Enter the number of row(s) = ");
    scanf("%d", &r);
    printf("Enter the number of column(s) = ");
    scanf("%d", &c);
    //reading elements of matrix A
    printf("Enter the matrix A elements = \n");
    for (i = 0; i < r; i++) {
        for (j = 0; j < c; j++) {
            scanf("%d", &a[i][j]);
        }
    }
    //reading elements of matrix B
    printf("Enter the matrix B elements = \n");
    for (i = 0; i < r; i++) {
        for (j = 0; j < c; j++) {
            scanf("%d", &b[i][j]);
        }
    }
    //multiplying A and B
    printf("Multiplication of A and B = \n");
    for (i = 0; i < r; i++) {
        for (j = 0; j < c; j++) {
            ab[i][j] = 0;
            for (k = 0; k < c; k++) {
                ab[i][j] += a[i][k] * b[k][j];
            }
        }
    }
    //printing matrix AB
    for (i = 0; i < r; i++) {
        for (j = 0; j < c; j++) {
            printf("%d\t", ab[i][j]);
        }
        printf("\n");
    }
    //finding odd and even elements in matrix AB
    e = 0;
    o = 0;
    for (int i = 0; i < r; ++i) {
        for (int j = 0; j < c; ++j) {
            if ((ab[i][j] % 2) == 0) {
```

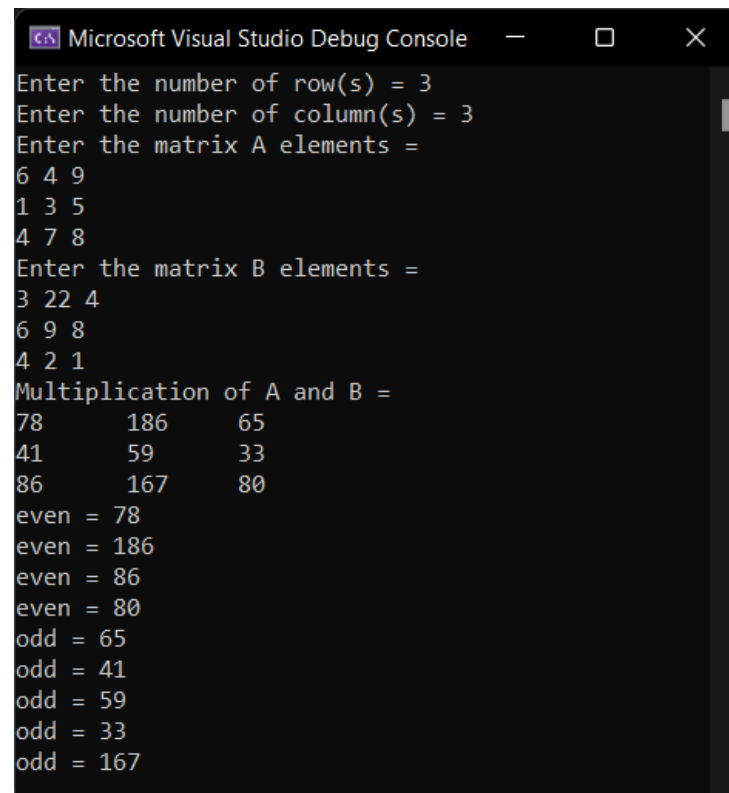
```
eve[e] = ab[[]];  
e++;
```

```

    }
    else {
        od[o] = ab[i][j];
        o++;
    }
}
}
//printing odd and even elements
for (i = 0; i < e; i++)
    printf("even = %d\n", eve[i]);
for (i = 0; i < o; i++)
    printf("odd = %d\n", od[i]);
return 0;
}

```

## OUTPUT:



```

Microsoft Visual Studio Debug Console
Enter the number of row(s) = 3
Enter the number of column(s) = 3
Enter the matrix A elements =
6 4 9
1 3 5
4 7 8
Enter the matrix B elements =
3 22 4
6 9 8
4 2 1
Multiplication of A and B =
78      186      65
41      59      33
86      167      80
even = 78
even = 186
even = 86
even = 80
odd = 65
odd = 41
odd = 59
odd = 33
odd = 167

```

Ex. No: 7

Date: 08-11-2021

## USER DEFINED FUNCTIONS

### PROBLEM GIVEN:

Write a program to implement user defined functions to implement the following functionality 1. Read details 2. BILL Calculation 3. print details

### ALGORITHM:

Step 1: Start

Step 2: Declare functions for 1. Read details, 2. Bill Calculation and 3. Print Details.

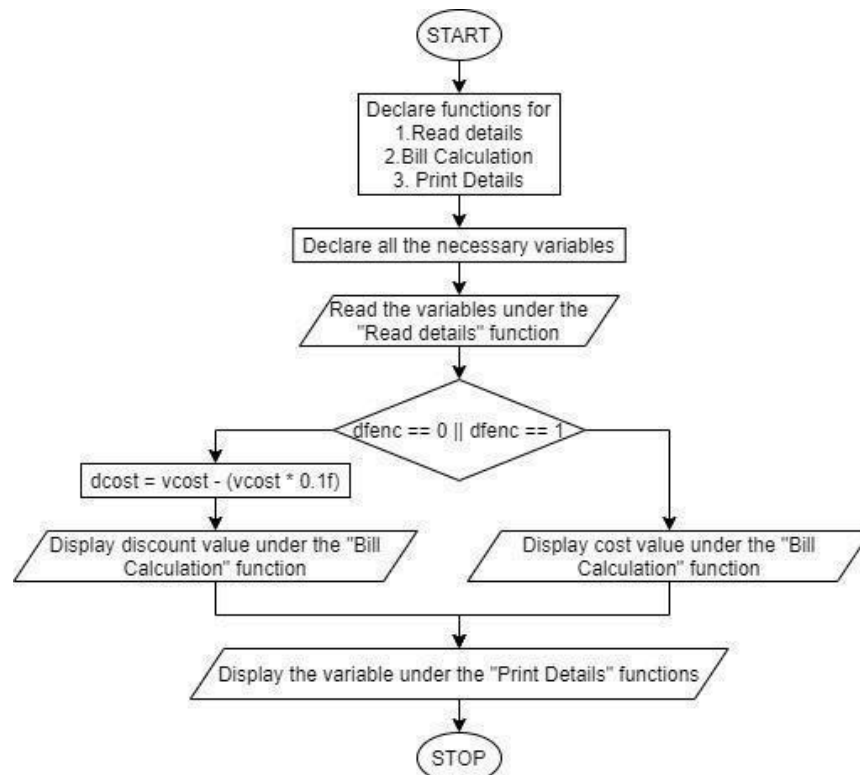
Step 3: Declare all the necessary variables

Step 4: Read the variables under the "Read details" function

Step 5: If  $dfenc == 0 \parallel dfenc == 1$ ,  $dcost = vcost - (vcost * 0.1f)$  and Display discount value under the "Bill Calculation" function, else Display cost value under the "Bill Calculation" function

Step 6: Display the variable under the "Print Details" functions Step 7: Stop

### FLOWCHART:



## PROGRAM:

```
#include <stdio.h>

enum variants { Hatchback, Sedan, SUV, MUV };
enum defence { defence, exdefence };

void readinfo();
void billcalc();
void printinfo();

//Get the details of the car and customer
char vname[20], vcolor[10], cname[20], gendr[20], engine[20];
enum variants vtype;
enum defence dfenc;
float vcost, dcost;
int nov, bookp, bookid, choice;

void readinfo()
{
    printf("1. Read Details\n");
    printf("Enter name of the vehicle: ");
    scanf("%s", &vname);
    printf("Variant of the vehicle:\n(a) Hatchback\n(b) Sedan\n(c) SUV\n(d) MUV\n");
    printf("Choose Variant (0, 1, 2, 3): ");
    scanf("%d", &vtype);
    //Check the type of vehicle for cost of the vehicle
    if (vtype == 0) {
        printf("Enter Cost of the Hatchback (4L - 8L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 1) {
        printf("Enter Cost of the Sedan (8L - 11L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 2) {
        printf("Enter Cost of the SUV (13L - 40L): ");
        scanf("%f", &vcost);
    }
    else if (vtype == 3) {
        printf("Enter Cost of the MUV (5L - 25L): ");
        scanf("%f", &vcost);
    }
}
```

```

else {
    printf("Invalid Input!!\n");
}
printf("Enter colour of the vehicle: ");
scanf("%s", &vcolor);
printf("Enter number of vehicles available: ");
scanf("%d", &nov);
printf("Enter booking period(open-1, close-0): ");
scanf("%d", &bookp);
printf("Enter name of the customer: ");
scanf("%s", &cname);
printf("Enter gender: ");
scanf("%s", &gendr);
printf("Occupation:\n");
printf("(a) Defence worker\n(b) Ex-defence worker\n(c) Neither\n");
printf("Choose Occupation(0, 1, 2): ");
scanf("%d", &dfenc);
printf("Enter booking ID: ");
scanf("%d", &bookid);
}

```

```

void billcalc()
{
    printf("\n2. Bill Calculation\n");
    if (dfenc == 0 || dfenc == 1) {
        printf("\tTotal Cost: %f\n", vcost);
        printf("\tDiscount Amount: %f\n", vcost * 0.1f);
        dcost = vcost - (vcost * 0.1f);
        printf("\tCost after discount: %f\n", dcost);
    }
    else {
        printf("\tDiscount not available.\n");
        printf("\tCost of the vehicle: %f\n", vcost);
    }
}

```

```

void printinfo()
{
    printf("\n3. Print Details");
    //Print Invoice
    printf("\n\t-----INVOICE ----- \n");
    printf("\tName of the customer: %s\n", cname);
}

```

```
printf("\tBooking ID: %d\n", bookid);  
printf("\tName of the vehicle: %s\n", vname);
```



```

//Check the type of vehicle for Invoice
if (vtype == 0) {
    printf("\tVariant: Hatchback\n");
}
else if (vtype == 1) {
    printf("\tVariant: Sedan\n");
}
else if (vtype == 2) {
    printf("\tVariant: SUV\n");
}
else if (vtype == 3) {
    printf("\tVariant: MUV\n");
}
else {
    printf("\tInvalid Input!!\n");
}
printf("\tColour: %s\n", vcolor);
//Check occupation for discount
if (dfenc == 0 || dfenc == 1) {
    dcost = vcost - (vcost * 0.1f);
    printf("\tCost after discount: %f\n", dcost);
}
else {
    printf("\tCost: %f\n", vcost);
}
//Check the number of vehicles available
(nov > 0) ? printf("\tNo of vehicles available: %d\n", nov)
: printf("\tVehicle not available\n");
//Check booking period
if (bookp == 1) {
    printf("\tBooking: Open\n");
}
else {
    printf("\tBooking: Close\n");
}
}

int main()
{
    readinfo();
    billcalc();
    printinfo();
}

```



## OUTPUT:

```
C:\Users\ashva\source\repos\exp7\exp7\exp7code.exe
1. Read Details
Enter name of the vehicle: Kiwi
Variant of the vehicle:
(a) Hatchback
(b) Sedan
(c) SUV
(d) MUV
Choose Variant (0, 1, 2, 3): 2
Enter Cost of the SUV (13L - 40L): 1564541.25
Enter colour of the vehicle: Blue
Enter number of vehicles available: 465
Enter booking period(open-1, close-0): 1
Enter name of the customer: Ashvath
Enter gender: Male
Occupation:
(a) Defence worker
(b) Ex-defence worker
(c) Neither
Choose Occupation(0, 1, 2): 1
Enter booking ID: 654654

2. Bill Calculation
   Total Cost: 1564541.250000
   Discount Amount: 156454.125000
   Cost after discount: 1408087.125000

3. Print Details
   -----INVOICE-----
   Name of the customer: Ashvath
   Booking ID: 654654
   Name of the vehicle: Kiwi
   Variant: SUV
   Colour: Blue
   Cost after discount: 1408087.125000
   No of vehicles available: 465
   Booking: Open

   -----
Process exited after 91.75 seconds with return value 0
Press any key to continue . . .
```

Ex. No: 7b

Date: 15-11-2021

## RECURSIVE FUNCTIONS

### PROBLEM GIVEN:

Write a program to find factorial of a number using recursive functions.

### ALGORITHM:

Step 1: Start

Step 2: Declare all the required variables and function fact(int). Step 3:

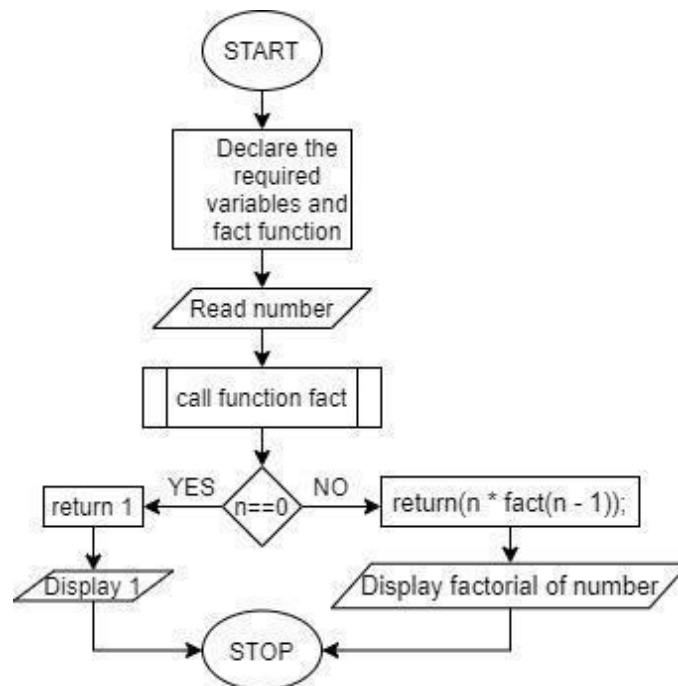
Get number from the user.

Step 4: Call the function fact(n) with arguments as the reference variable. Step 5:

Check if  $n == 0$ . If true, return 1. Else return  $(n * \text{fact}(n - 1))$ .

Step 6: Display the factorial of the number.

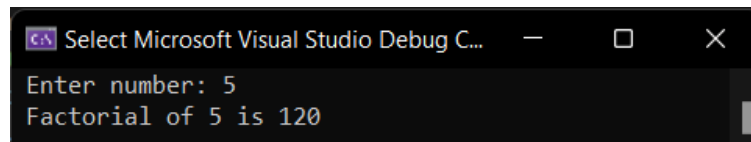
### FLOWCHART:



## PROGRAM:

```
//EXP-7b
//WAP in C to find Factorial of a number using recursive functions
#include<stdio.h>
//Declare function fact(int)
int fact(int);
void main()
{
    //Declare variables
    int x, n;
    //Read number
    printf(" Enter number: ");
    scanf("%d", &n);
    //Call function fact(int n) and store return value in variable x
    x = fact(n);
    //Display the result
    printf(" Factorial of %d is %d\n", n, x);
}
//fact(int n)function
int fact(int n)
{
    //Check if number is zero
    if (n == 0)
        //Return 1 if yes
        return(1);
    return(n * fact(n - 1));
}
```

## OUTPUT:



```
Select Microsoft Visual Studio Debug C...
Enter number: 5
Factorial of 5 is 120
```

## **POINTERS**

### **PROBLEM GIVEN:**

Write a program to read n number of Customer\_ids and cost of vehicle purchased (for each customer) into an array. Calculate the total amount received by the Automobile showroom and display the same in the form of Accounts Balance Sheet. Implement the same using pointers.

### **ALGORITHM:**

Step 1: Start

Step 2: Declare the required variables, integer arrays and calc\_sum function  
Step 3: Get the number of customers from the user(n)

Step 4: Introduce a for loop and then get the vehicle cost of each customer and store it in an array

Step 5: Reference the first element in the array into a pointer variable

Step 6: Call the function calc\_sum with arguments as the reference variable and number of customers.

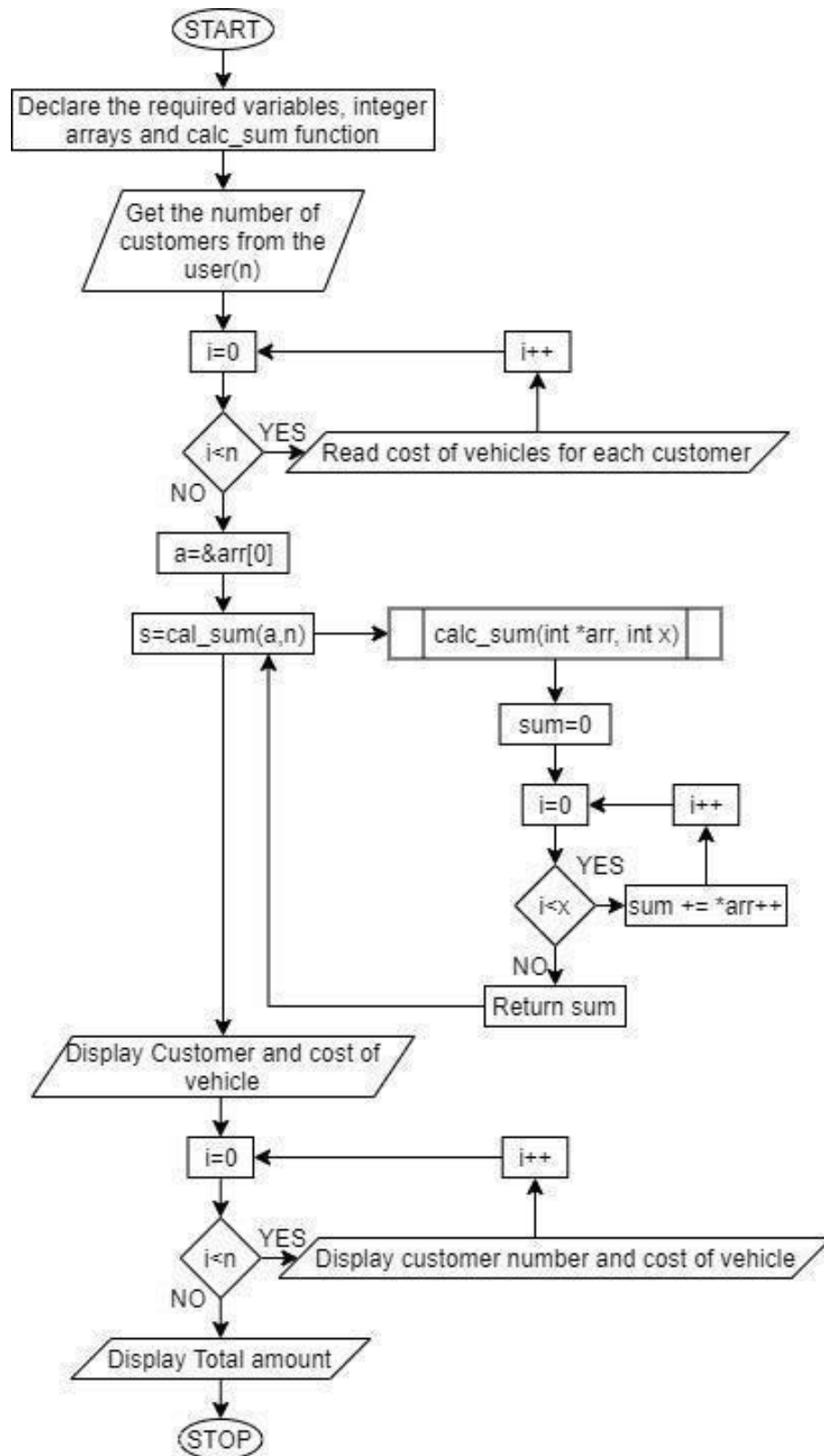
Step 7: Initialize sum to 0

Step 8: Introduce a loop to dereference the element in the array and increment the reference variable

Step 9: Return the sum to the main function

Step 10: Display the number of customers, cost of vehicles and total amount

## FLOWCHART:

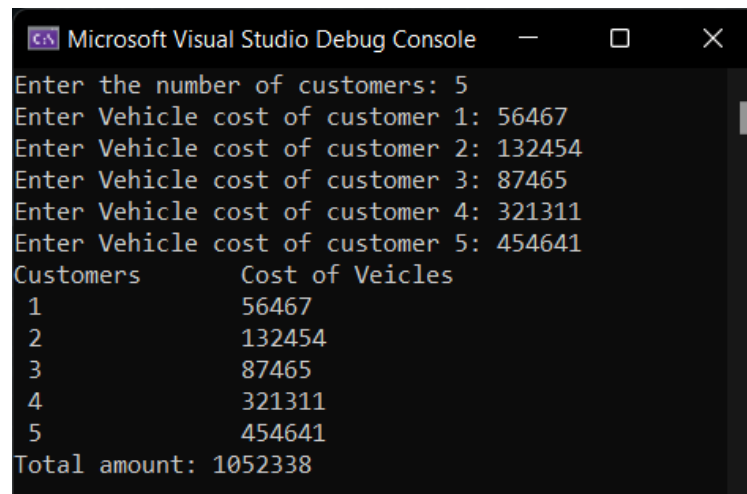


## PROGRAM:

```
//EXP-8_Pointers
#include <stdio.h>
int calc_sum(int* arr, int x) {
    int sum = 0;
    // printf("%d %d", *(arr+3), x);
    for (int i = 0; i < x; i++) {
        sum += *arr++;
    }
    return sum;
}
int main()
{
    int n, i, j, arr[10], * a, s;
    printf("Enter the number of customers: ");
    scanf("%d", &n);

    for (i = 0; i < n; i++) {
        printf("Enter Vehicle cost of customer %d: ", i + 1);
        scanf("%d", &arr[i]);
    }
    a = &arr[0];
    s = calc_sum(a, n);
    printf("Customers\tCost of Veicles\n");
    for (i = 0; i < n; i++) {
        printf(" %d\t\t%d\n", i + 1, arr[i]);
    }
    printf("Total amount: %d\n", s);
    return 0;
}
```

## OUTPUT:



The screenshot shows the Microsoft Visual Studio Debug Console with the following output:

```
Enter the number of customers: 5
Enter Vehicle cost of customer 1: 56467
Enter Vehicle cost of customer 2: 132454
Enter Vehicle cost of customer 3: 87465
Enter Vehicle cost of customer 4: 321311
Enter Vehicle cost of customer 5: 454641
Customers      Cost of Veicles
1              56467
2              132454
3              87465
4              321311
5              454641
Total amount: 1052338
```



**RETURNING AN ARRAY AS ARGUMENT**

**PROBLEM GIVEN:**

Write a C program to implement the following:

1. Define a function get\_details. Get two arrays from the users - The first one contains the roll number and the second array contains their corresponding marks.
2. In the same function, Find the marks that are above 70. return the corresponding register numbers from array1 using pointers to main.
3. In main(), arrange the register numbers in ascending order.

**ALGORITHM:**

Step 1: Start

Step 2: Declare necessary variables and function get\_details.

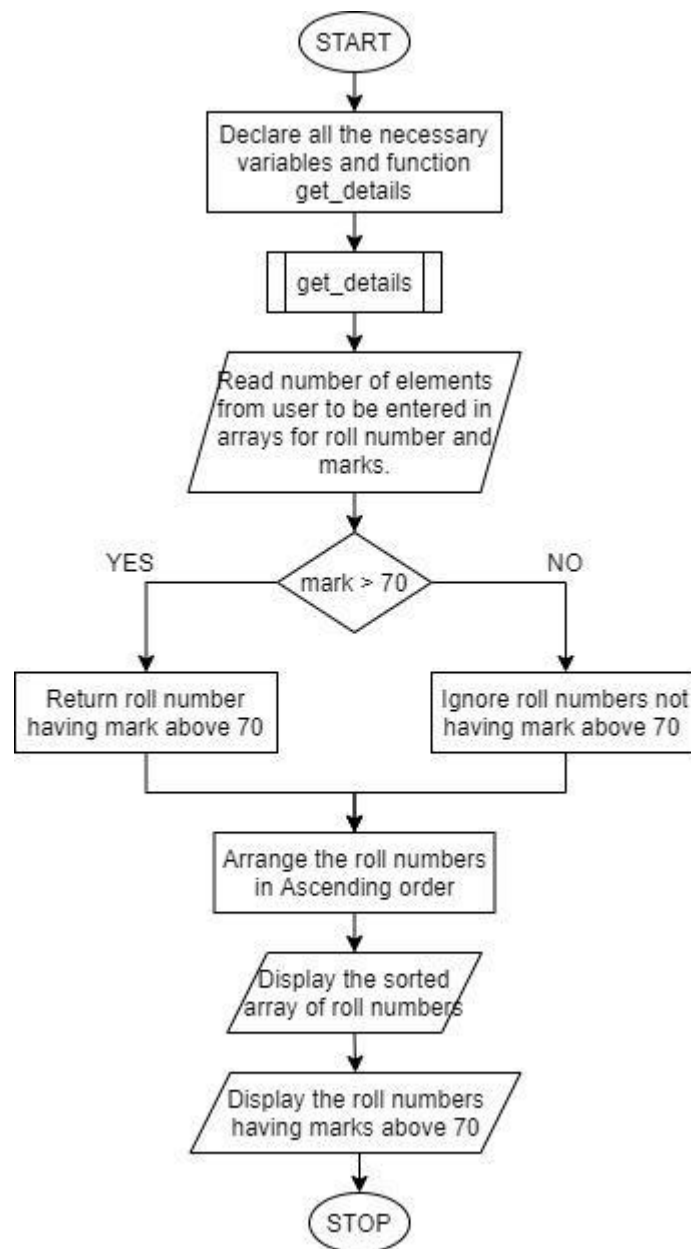
Step 3: Read number of elements from user to be entered in arrays for roll number and marks.

Step 4: Check if the marks are above 70. Those roll numbers having marks above 70 are returned to main function using pointers.

Step 5: In main function, arrange the roll numbers in ascending order.

Step 6: Print all necessary outputs

## FLOWCHART:



## PROGRAM:

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

```

int* get_details(int n){
    int i, j, roll[n], marks[n], *op;
    static int abv[10];
    printf("Enter The Student Register numbers: \n");
    for(i=0;i<n;i++){
        scanf("%d", &roll[i]);
    }
    printf("Enter Student's Corresponding Marks: \n");
    for(i=0;i<n;i++){
        scanf("%d", &marks[i]);
    }
    for(i=0, j=1;i<n;i++){
        if(marks[i] > 70){
            abv[j] = roll[i];
            j++;
        }
    }
    abv[0] = j-1;

    op = &abv[0];
    return op;
}

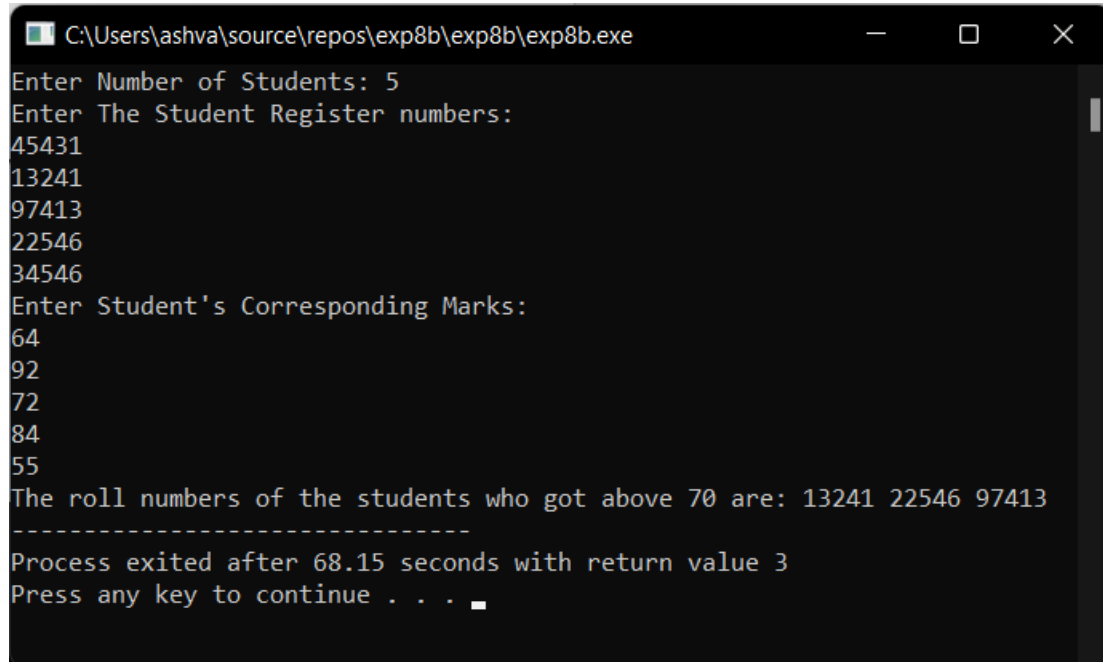
void main(){
    int i, j, n, x, arr[10], temp;
    int* ret;
    printf("Enter Number of Students: ");
    scanf("%d", &n);

    ret = get_details(n);
    x = *ret++;
    for(i=0;i<x;i++){
        arr[i] = *ret++;
    }
    for(i=0;i<x;i++){
        for(j=i+1;j<x;j++){
            if(arr[i] > arr[j]){
                temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }
    printf("The roll numbers of the students who got above 70 are: ");
    for(i=0;i<x;i++){
        printf("%d ", arr[i]);
    }
}

```

```
}  
  
}
```

### OTUPUT:



```
C:\Users\ashva\source\repos\exp8b\exp8b\exp8b.exe  
Enter Number of Students: 5  
Enter The Student Register numbers:  
45431  
13241  
97413  
22546  
34546  
Enter Student's Corresponding Marks:  
64  
92  
72  
84  
55  
The roll numbers of the students who got above 70 are: 13241 22546 97413  
-----  
Process exited after 68.15 seconds with return value 3  
Press any key to continue . . .
```

**Ex. No: 9**

**Date: 06-12-21**

## **STRUCTURES**

### **PROBLEM GIVEN:**

Write a program to create a structure for storing the customer details. Use appropriate data types to store the data (arrays, strings etc). Extend the previous program to implement the same.

### **ALGORITHM:**

Step 1: Start

Step 2: Declare necessary variables, pointer variables and structure variables.

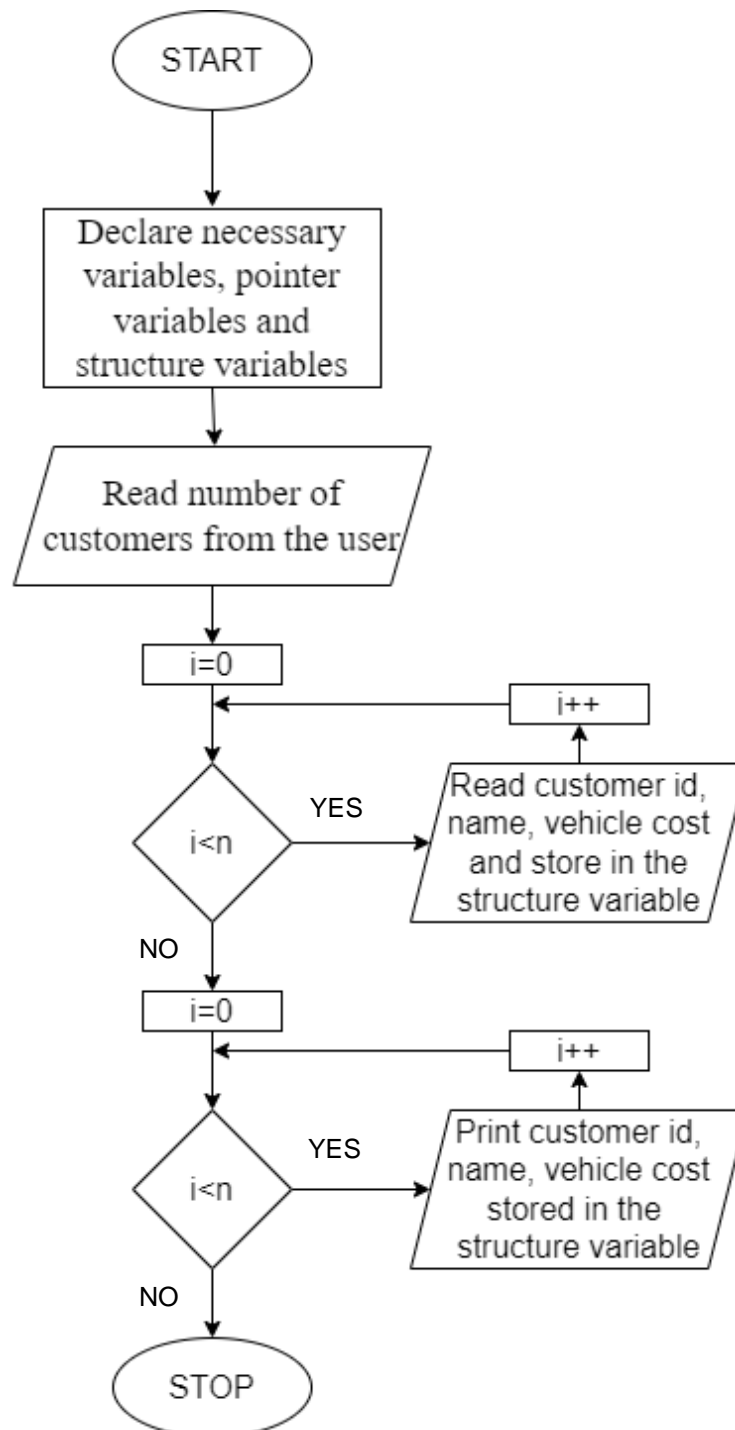
Step 3: Read number of customers from the user.

Step 4: Introduce a for loop to enter customer id, customer name and vehicle cost and store it in the structure variable.

Step 5: Display all the details stored in the structures using a for loop.

Step 6: Stop

**FLOWCHART:**



## PROGRAM:

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

struct customer{
    int cid;
    char name[10];
    float vcost;
};

int main(){
    int i, j, n;
    struct customer customers[10];
    struct customer *q, *customern;

    q = (struct customer *) malloc(sizeof(struct customer));

    printf("Enter number of customers : ");
    scanf("%d", &n);

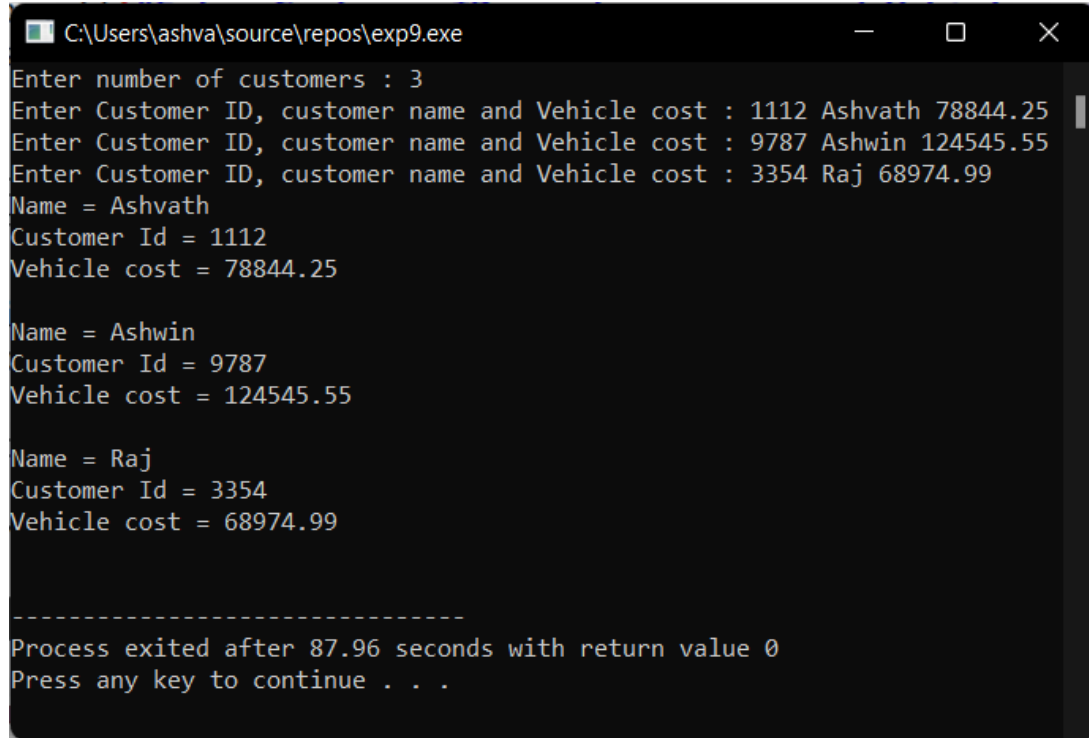
    for(i=0;i<n-1;i++){
        printf("Enter Customer ID, customer name and Vehicle cost : ");
        scanf("%d %s %f", &customers[i].cid, customers[i].name, &customers[i].vcost);
    }

    printf("Enter Customer ID, customer name and Vehicle cost : ");
    scanf("%d %s %f", &q->cid, q->name, &q->vcost);

    for(i=0;i<n-1;i++){
        printf("Name = %s\nCustomer Id = %d\nVehicle cost = %.2f\n\n", customers[i].name,
customers[i].cid, customers[i].vcost);
    }
    printf("Name = %s\nCustomer Id = %d\nVehicle cost = %.2f\n\n", q->name, q->cid, q-
>vcost);

    return 0;
}
```

## OUTPUT:



```
C:\Users\ashva\source\repos\exp9.exe
Enter number of customers : 3
Enter Customer ID, customer name and Vehicle cost : 1112 Ashvath 78844.25
Enter Customer ID, customer name and Vehicle cost : 9787 Ashwin 124545.55
Enter Customer ID, customer name and Vehicle cost : 3354 Raj 68974.99
Name = Ashvath
Customer Id = 1112
Vehicle cost = 78844.25

Name = Ashwin
Customer Id = 9787
Vehicle cost = 124545.55

Name = Raj
Customer Id = 3354
Vehicle cost = 68974.99

-----
Process exited after 87.96 seconds with return value 0
Press any key to continue . . .
```



**Ex. No: 10**

**Date: 06-12-21**

## **FILES**

### **PROBLEM GIVEN:**

Write a program to store the customer data into a file and extract details from the file. Extend the previous program to implement the same.

### **ALGORITHM:**

STEP 1 : START

STEP 2 : Declare all necessary variables, pointer variables, structure variables and file pointers.

STEP 3 : Get the number of customers from the user.

STEP 4 : Implement a for-loop for n times reading each user's details (customer id, customer name, customer name and Vehicle cost).

STEP 5 : Open a file in write mode. If file is not opened, Display error message and end the program.

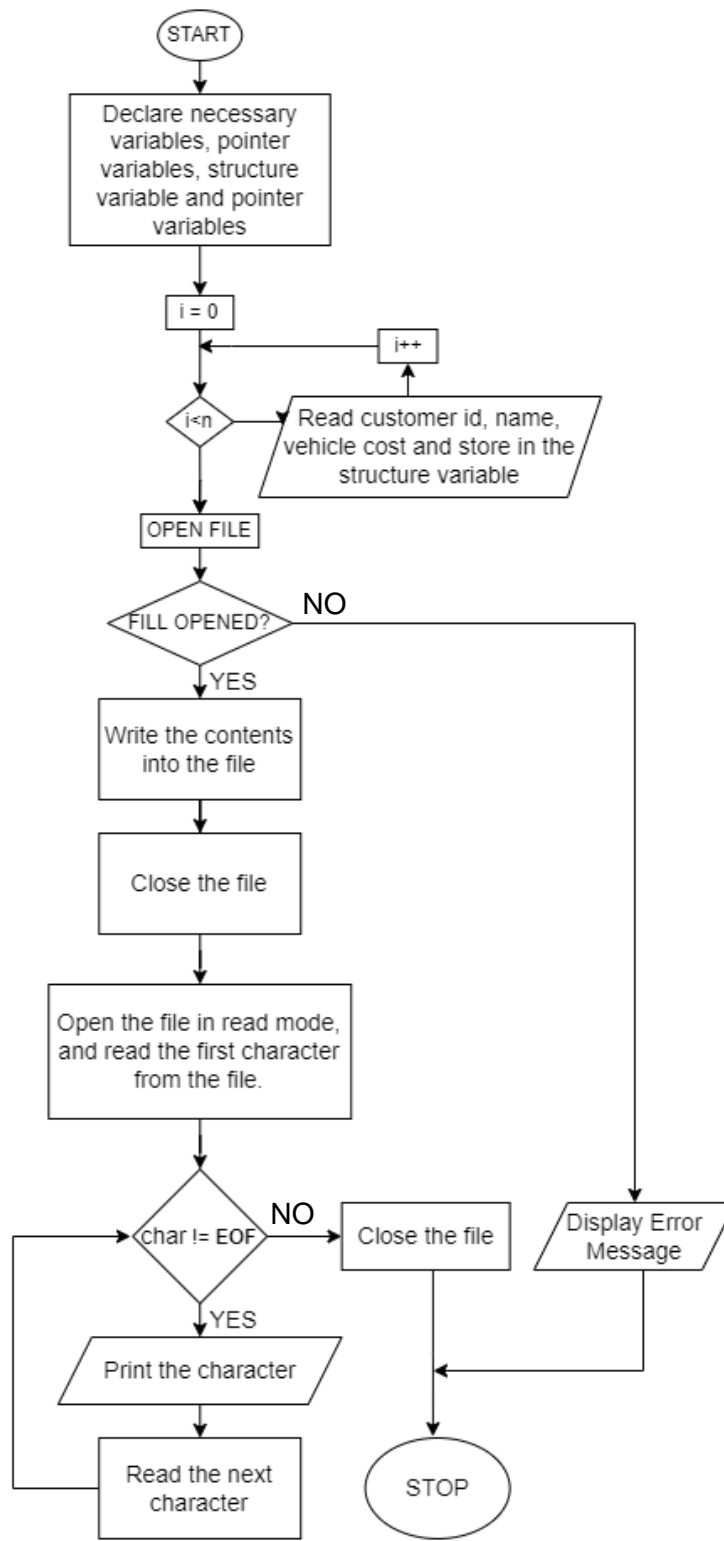
STEP 6 : If file is opened, then write the contents into the file and close the file.

STEP 7 : Close the file.

STEP 8 : Implement a while loop that check if the character is not "EOF".If yes, print the character and read the next character. If not, break the loop.

STEP 9 : STOP

## FLOWCHART:



## PROGRAM:

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

struct customer{
    int cid;
    char name[10];
    float vcost;
};

int main()
{
    int i, j, n;
    struct customer customers[10];
    struct customer *q, *customern;
    char ch;
    FILE *fp;

    q = (struct customer *) malloc(sizeof(struct customer));

    printf("Enter number of customers : ");
    scanf("%d", &n);

    for(i=0;i<n-1;i++){
        printf("Enter Customer ID, customer name and Vehicle cost : ");
        scanf("%d %s %f", &customers[i].cid, customers[i].name, &customers[i].vcost);
    }

    printf("Enter Customer ID, customer name and Vehicle cost : ");
    scanf("%d %s %f", &q->cid, q->name, &q->vcost);

    fp = fopen("sample.txt", "w");

    for(i=0;i<n-1;i++){
        fprintf(fp, "Name = %s\nCustomer Id = %d\nVehicle cost = %.2f\n\n",
customers[i].name, customers[i].cid, customers[i].vcost);
    }
    fprintf(fp, "Name = %s\nCustomer Id = %d\nVehicle cost = %.2f\n\n", q->name, q-
>cid, q->vcost);
    fclose(fp);

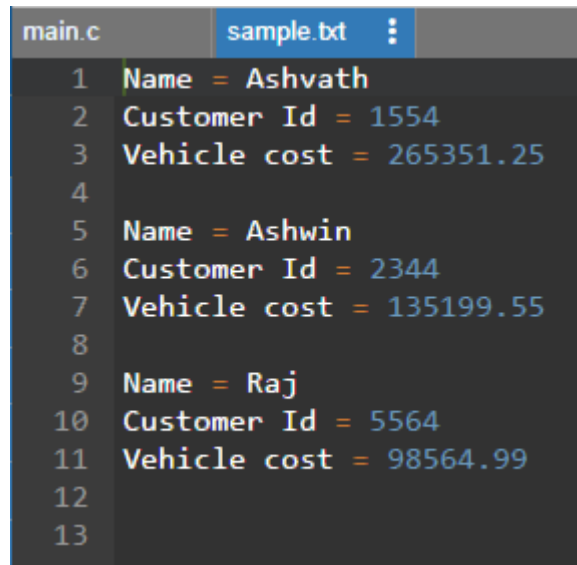
    fp = fopen("sample.txt", "r");
    ch = getc(fp);

    printf("\nCustomer details stored in the files are...\n");
```

```
while(ch != EOF){
    printf("%c", ch);
    ch = getc(fp);
}

return 0;
}
```

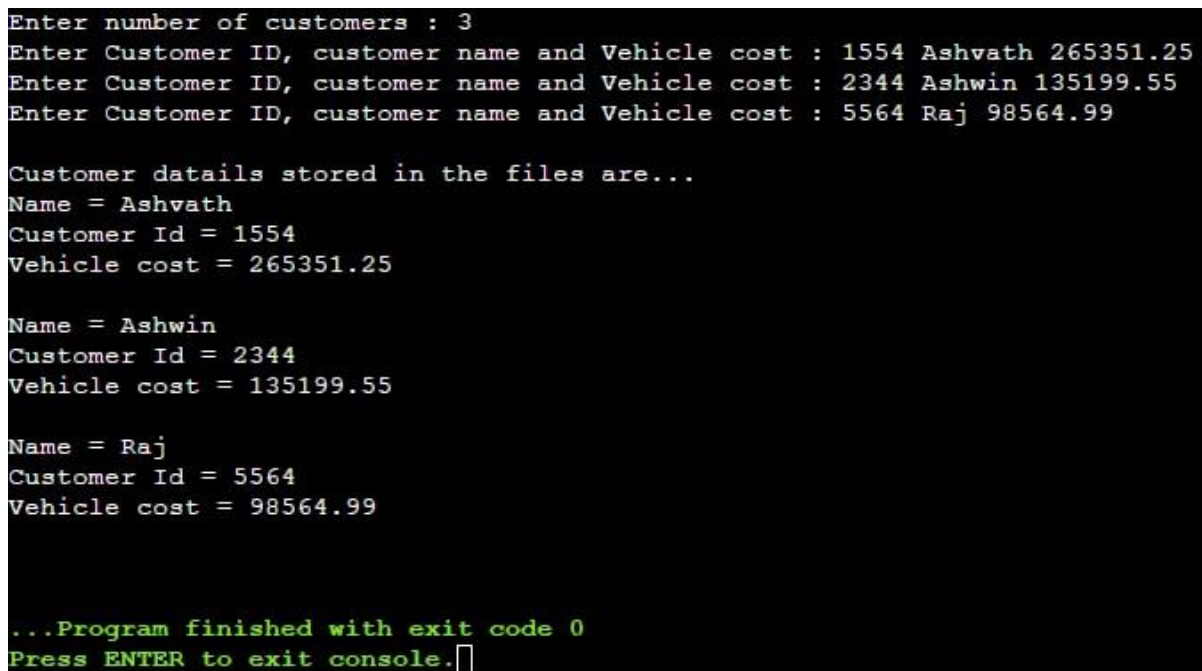
#### TEXT FILE:



The screenshot shows a code editor with two tabs: 'main.c' and 'sample.txt'. The 'sample.txt' tab is active, displaying the following text:

```
1 Name = Ashvath
2 Customer Id = 1554
3 Vehicle cost = 265351.25
4
5 Name = Ashwin
6 Customer Id = 2344
7 Vehicle cost = 135199.55
8
9 Name = Raj
10 Customer Id = 5564
11 Vehicle cost = 98564.99
12
13
```

#### OUTPUT:



The screenshot shows a terminal window with the following output:

```
Enter number of customers : 3
Enter Customer ID, customer name and Vehicle cost : 1554 Ashvath 265351.25
Enter Customer ID, customer name and Vehicle cost : 2344 Ashwin 135199.55
Enter Customer ID, customer name and Vehicle cost : 5564 Raj 98564.99

Customer details stored in the files are...
Name = Ashvath
Customer Id = 1554
Vehicle cost = 265351.25

Name = Ashwin
Customer Id = 2344
Vehicle cost = 135199.55

Name = Raj
Customer Id = 5564
Vehicle cost = 98564.99

...Program finished with exit code 0
Press ENTER to exit console.□
```