RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

FOUR YEAR BACHELOR OF TECHNOLOGY (B.Tech.) DEGREE COURSE

SEMESTER: THIRD (C.B.C.S)

BRANCH: INFORMATION TECHNOLOGY

Subject Name: Programming Logic and Design Using 'C' **Subject code: BTIT302P**

Load	Practical	Credits	College Assessment Marks	University Evaluation	Total Marks
2Hrs (Practical)	2	1	25	25	50

Aim: To develop programming & logic development skills.

Prerequisite(s): Student should have a basic understanding of Computer Programming terminologies. A basic understanding of any of the programming languages will help you in understanding the C programming concepts and move fast on the learning track.

Prerequisites are followings.

1. Enthusiasm
2. Logic Building Skills
3. Mathematics (Basics like prime number, factorial)

Course Objectives

1	This course is emphasized to develop programming and problem-solving skills structured programming using 'C' environment.
2	This course is designed to provide a comprehensive study of the C programming language which provides students with the means of writing efficient, maintainable, and portable code.
3	To learn and acquire art of computer programming

in

Course Outcome:

At the end of this course students are able to:

CO1	Acquire fundamental knowledge of c programming language.
CO2	Apply Array , functions and pointer techniques in program development.
CO3	Able to implement structured programs for complex data.
CO4	Apply knowledge of console programming for file handling and real time applications.
CO5	Apply knowledge of memory management and graphics for business applications and related research area.
CO6	Acquire knowledge of advanced concept in c like BIOS, TSR etc.

NOTE:

1. Practicals are based on PROGRAMMING LOGIC AND DESIGN USING ‘C’ syllabus
2. Practical’s have to be performed using ‘C’ language
3. There should be at the most two practical’s per unit
4. Minimum ten practical’s have to be performed
5. Do not include study experiments

List of Practicals: -

Topic 1: Based on Looping & Decision Making

Topic 2: Based on Array

Topic 3: Based on String

Topic 4: Based on Function

Topic 5: Based on Pointer

Topic 6: Based on Structure

Topic 7: Based on Files

Open Ended Experiments

Topic 8: Based on Graphics Topic

9: Based on Animations

Text Books:

1. Programming Techniques Through ‘C’ : M. G. Venkateshmurthy (Pearson)
2. LET US ‘C : Yashwant P. Kanetkar. (BPB).
3. Graphics Under C: Yashwant Kanetkar (BPB).
4. Writing TSR’S through ‘C’: Yashwant Kanetkar (BPB).
5. Programming in ‘C’: Ashok N. Kamthane (2nd Edition[Pearson])
6. Anita Goel and Ajay Mittal, “Computer Fundamentals and Programming in C”, Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.
7. Alexis Leon; Mathews Leon, Fundamentals of Information Technology, 2/e, Vikas publishing

Reference Books :

1. The Complete Reference C (4th Edition): Herbert Schildt [TMH]
2. The C Programming Language: Dennis Ritchie & Brain Kernighan [Pearson]
3. Programming with C : K.R.Venugopal & S.R.Prasad [TMH]
4. Programming in C: B. L. June ja and Anita Seth (cengage learning)
5. A First Course in Programming with ‘C’: T. Jeyapoovan (Vikas)

K. D. K. COLLEGE OF ENGINEERING, NAGPUR
IMPARTING TECHNICAL EDUCATION SINCE 1984
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Department of Information Technology
Semester: III

Name of Subject: Software Engineering & Project Management Lab

Subject Code: BTIT302P

Course Outcome:

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CO3	Able to implement structured programs for complex data.
CO4	Apply knowledge of console programming for file handling and real-time applications.
CO5	Apply knowledge of memory management and graphics for business applications and related research area.
CO6	Acquire knowledge of advanced concept in c like BIOS, TSR etc.

LIST OF PRACTICALS

1	Write a program to find the reverse of a five digit number.
2	a) Write a program to find the greatest among three numbers using if-else statement. b) Write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol. c) Write a program for complicated logics that ultimately boil down to only two answers - yes or no.
3	a) Write a program to study the execution of a for loop. b) Write a program to study the execution of a for loop. c) Write a program to study the execution of a for loop.

4	Write a menu driven program which has following options : 1. Factorial 2. Fibonacci 3. Armstrong 4. Exit
5	Write a menu-driven program which has following options: 1. 3×3 Matrix Multiplication 2. Diagonal Elements Of Matrix 3. Bubble Sort 4. Exit
6	Write a menu-driven program which has following options: 1. Addition Of Matrices 2. MaxMin 3. Linear Search 4. Exit
7	Write a menu-driven program which has following options: 1. Find Length Of String 2. Copy One String To Another String 3. Concatenate Two Strings 4. Compare Two Strings 5. Exit
8	Write a menu-driven program which has following options : 1. Factorial Of A Number 2. Fibonacci Series 3. Exit
9	Write a program to copy contents of one file to another file.
10	Write a program using structure to specify data on students.
11	Write a C graphics program to animate and move a car.

Prof. Y.D.Choudhari
Subject Teacher

Dr.S.P. Khandait
Head of Department

PRACTICAL NO :1(A)

Aim : Write a program for swapping two numbers without using a third variable. Program : main() { int a,b;

clrscr();

printf("Enter Two Numbers :");
scanf("%d%d",&a,&b); printf("Before Swapping : a=%d , b=%d",a,b); a=a+b; b=a-b; a=a-b; printf("After Swapping : a=%d , b=%d",a,b);

getch(); return 0;

}

Output :

Enter Any Two Numbers : 3 5

Before Swapping: a=3 , b=5

After Swapping : a=5 , b=3

PRACTICAL NO :1(B)

Aim : Write a program for swapping two numbers using a third variable.
Program : main() { int a,b,temp;

clrscr(); printf("Enter Two Numbers :");

scanf("%d%d",&a,&b); printf("Before Swapping : a=%d , b=%d",a,b); temp=a; a=b; b=temp; printf("After Swapping : a=%d , b=%d",a,b);

getch(); return 0;

}

Output :

Enter Any Two Numbers : 1 3

Before Swapping: a=1 , b=3

After Swapping : a=3 , b=1

PRACTICAL NO :1(C)

Aim : Write a program to find the reverse of a five digit number.

Program : main() {

```
long int num,a,b,c,d,e,f,g,h,rev;
clrscr(); printf("Enter A Five Digit
Number :");
scanf("%ld",&num);
a=num/10; b=num%10;
c=a/10; d=a%10; e=c/10; f=c%10; g=e/10;
h=e%10; i=g/10; j=g%10;
rev=(b*10000)+(d*1000)+(f*100)+(h*10)+(j*1);

printf("Reverse Number =%d",rev);
getch(); return
0;
}
```

Output :

Enter Any Number : 43579
Reverse Number is 97534

Viva Questions :

1) What is C language ? Why is it considered a high-level language ?
2) What are the different data types in C?
3) What is the difference between int, float, and char ?

PRACTICAL NO : 2(A)

Aim : Write a program to find the greatest among three numbers using if-else statement.

Program :

```
main()    {
int a,b,c;
clrscr();
printf("Enter Three Numbers :");
scanf("%d%d%d",&a,&b,&c);
if(a>b && a>c) printf("%d is
greater",a); else { if(b>c)
printf("%d is greater",b); else
printf("%d is greater",c);
} getch();
return 0;
}
```

Output :

Enter Three Numbers : 3 5 4
5 is greater

PRACTICAL NO : 2(B)

Aim : Write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol.

Program :

```
main() { char ch;
clrscr(); printf("Enter Any
Character :");
scanf("%c",&ch);
if(ch>=65 && ch<=90)
printf("Capital Letter"); else
{
if(ch>=97 && ch<=122) printf("Small
Letter");
else
{
if(ch>=48 && ch<=57)
printf("Digit"); else
printf("Special Symbol");
}
}
getch(); return
0;
}
```

Output :

Enter Any Character : # Special Symbol

PRACTICAL NO : 2(C)

Aim : Write a program for complicated logics that ultimately boil down to only two answers - yes or no.

Program :

```
main() { int
age; char
ms,gen;
clrscr();
printf("Enter Gender, Age, Marital Status :");
scanf("%c%d%c",&gen,&age,&ms);
printf("Driver Insured :");
if(ms=='M')
printf("Yes"); else

{ if(gen=='M')
{ if(age>30)
printf("Yes");
else
printf("No");
} else {
if(age>25)
printf("Yes");
else
printf("No");
} }
getch();
return 0;
}
```

Output :

Enter Gender, Age, Marital Status : F 30 U

Driver Insured : Yes

Viva Questions :

1) What are control structures in C ? Name the different types of control structures in C.
2) Explain the difference between if and if else statements.
3) What happens if the condition in an if statement evaluates to false ?

PRACTICAL NO : 3(A)

Aim : Write a program to study the execution of a for loop.
Program :

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

Output :

```
*
* *
* * *
* * * *
* * * * *
```

PRACTICAL NO : 3(B) Aim
: Write a program to study the execution of a for loop.
Program :

```
main() {
int i,j;
clrscr(); for(i='A';i<='E';i++)

{
for(j='A';j<=i;j++)
{
printf("%c ",j);
}
printf("\n");
} getch();
return 0;
}
```

Output :

A
A B
A B C A B C D A B C D E

PRACTICAL NO : 3(C)

Aim : Write a program to study the execution of a for loop.

Program :

```
main() { int
i,j,k,c=1; clrscr();
for(i=1;i<=4;i++)
{
for(j=1;j<=4-i;j++)
{ printf("
"); }
for(k=1;k<=i;k++)
{
printf("%d ",c++);
} printf("\n");
}

getch(); return
0;
}
```

Output :

1

2 3

4 5 6

7 8 9 10

Viva Questions :

1) What is the full form of ASCII ?

2) What is a Loop ? What are the different types of loops in C ?

3) How does a for loop differ from a while loop?

PRACTICAL NO : 4

Aim : Write a menu driven program which has following options :
1. Factorial
2. Fibonacci
3. Armstrong
4. Exit

Program :

```
#include<stdio.h>
#include<conio.h>
int main() {
int choice,num,i,fact,f1=0,f2=1,f3,rem,arm=0,c;
char ans; clrscr(); printf("Menu :"); printf("\n1.
Factorial"); printf("\n2. Fibonacci"); printf("\n3.
Armstrong"); printf("\n4. Exit");
printf("\n\nEnter Your Choice : ");
scanf("%d",&choice); do { switch(choice)
{ case 1
:
printf("Enter Number : ");
scanf("%d",&num); fact=1;
for(i=1;i<=num;i++)
fact=fact*i; printf("Factorial
= %d",fact); break; case 2 :
printf("Enter Number Of Terms : ");
scanf("%d",&num); printf("Fibonacci
Series : %d %d ",f1,f2);
for(i=3;i<=num;i++)
{ f3=f1+f2;
printf("%d ",f3);

f1=f2;
f2=f3; }
break;
case 3 :
printf("
Enter
Numbe
r : ");
scanf("
%d",&n
um);
c=num;
```

```
while(n
um>0)
{
rem=num%10;
arm=(rem*rem*rem)+arm; num=num/10;
} if(c==arm)
printf("Armstrong Number");
else printf("Not An Armstrong
Number");
break; case
4 : exit(0);
default :
printf("\nWrong Choice");
}
printf("\n\nDo You Want To Continue ? : ");
fflush(stdin); scanf("%c",&ans);
}
while(ans=='Y');
getch(); return 0;
}
```

Output :

Menu :

1. Factorial
2. Fibonacci
3. Armstrong
4. Exit

Enter Your Choice : 2

Enter Number Of Terms : 5

Fibonacci Series : 0 1 1 2 3

Do You Want To Continue ? : Y

Enter Number Of Terms : 10

Fibonacci Series: 0 1 1 2 3 5 8 13 21 34

Do You Want To Continue ? : N

Viva Questions :

1) What is Factorial of a number ?
2) What is the Fibonacci Series ?
3) What is an Armstrong number ? Can you explain how you check if a number is an Armstrong number in your program ?

.

PRACTICAL NO : 5

Aim : Write a menu-driven program which has following options:

1. 3×3 Matrix Multiplication

2. Diagonal Elements Of Matrix

3. Bubble Sort

4. Exit

Program :

```
#include<stdio.h>
#include<conio.h>
int main() {
int choice,n,matrix1[3][3],matrix2[3][3],m[3][3],i,j,k,sum,a[n],temp,row,col;
char ans; clrscr(); printf("Menu :");
printf("\n1. 3×3 Matrix Multiplication");
printf("\n2. Diagonal Elements Of Matrix");
printf("\n3. Bubble Sort"); printf("\n4.
Exit"); printf("\n\nEnter Your Choice : ");
scanf("%d",&choice); do {
switch(choice)
{ case 1
:
printf("Enter The Array Elements Of Matrix 1 :\n"); for(i=0;i<3;i++)
{
for(j=0;j<3;j++)
{
scanf("%d",&matrix1[i][j]);
} }
printf("Enter The Array Elements Of Matrix 2 :\n"); for(i=0;i<3;i++)
{
for(j=0;j<3;j++)
{
scanf("%d",&matrix2[i][j]);
}

}
for(i=0;i<3;i++)
{
for(j=0;j<3;j++)
{
sum=0;
for(k=0;k<3;k++) {
sum=sum+matrix1[i][k]*matrix2[k][j];
} m[i][j]=sum;
```

```
} }
printf("Multiplication Of Two Matrices :\n");
for(i=0;i<3;i++) { for(j=0;j<3;j++) {
printf("%d\t",m[i][j]);
}
printf("\n");
} break;
case 2 :
printf("Enter Number Of Rows : ");
scanf("%d",&row); printf("Enter
Number Of Columns : ");
scanf("%d",&col); printf("Enter
Elements Of Matrix :\n");
for(i=0;i<row;i++) { for(j=0;j<col;j++)
{ scanf("%d",&m[i][j]);
} }
printf("Diagonal Elements Of Matrix:\n");
if(row==col) { for(i=0;i<row;i++) {
for(j=0;j<col;j++) { if(i==j)

printf("%d",m[i][j]);
else printf("\t"); }
printf("\n");
} } else printf("It Is Not A Square
Matrix"); break; case 3 :
printf("Enter Array Size : ");
scanf("%d",&n); printf("Enter
Array Elements:\n");
for(i=0;i<n;i++) {
scanf("%d",&a[i]); printf("\n"); }
for(i=n;i>0;i--) { for(j=0;j<i-
1;j++) { if(a[j]>a[j+1]) {
temp=a[j]; a[j]=a[j+1];
a[j+1]=temp;
}
} } printf("Sorted Array :
"); for(i=0;i<n;i++) {
printf("%d",a[i]); }
break; case 4 : exit(0);
default :
printf("Wrong Choice");
}
printf("\n\nDo You Want To Continue ? : ");
fflush(stdin);

scanf("%c",&ans);
} while(ans=='Y');
```

getch(); return 0; }
Output :
Menu :
1. 3×3 Matrix Multiplication
2. Diagonal Elements Of Matrix
3. Bubble Sort
4. Exit
Enter Your Choice : 2
Enter Number Of Rows : 2
Enter Number Of Columns : 2 Enter
Elements Of Matrix :
1
2
3
4
Diagonal Elements Of Matrix :
1
4
Do You Want To Continue : Y
Enter Number Of Rows : 3
Enter Number Of Columns : 3 Enter
Elements Of Matrix :
1
2
3
4
5
6
7
8
9
Diagonal Elements Of Matrix :
1
5
9
Do You Want To Continue : No

Viva Questions :

1) How can we determine the diagonal elements of a matrix ?
2) Can you explain the bubble sort algorithm ? How does it work ?
3) What happens when the user selects the exit option ? Does the program clean up resource or perform any final actions ?

PRACTICAL NO : 6

Aim : Write a menu-driven program which has following options:

1. Addition Of Matrices

2. MaxMin

3. Linear Search

4. Exit

Program :

```
#include<stdio.h>
#include<conio.h>
int main() {
int choice,n,matrix1[10][10],matrix2[10][10],sum[10][10],i,j,k,arr[100],min,max,item;
char ans; clrscr(); printf("Menu :"); printf("\n1. Addition Of Matrices"); printf("\n2.
MaxMin"); printf("\n3. Linear Search"); printf("\n4. Exit"); printf("\n\nEnter Your
Choice : ");
scanf("%d",&choice);
do {
switch(choice)
{ case 1
:
printf("Enter The Array Elements Of Matrix 1 :\n"); for(i=0;i<3;i++)
{
for(j=0;j<3;j++)
{
scanf("%d",&matrix1[i][j]);
} }
printf("Enter The Array Elements Of Matrix 2 :\n"); for(i=0;i<3;i++)
{
for(j=0;j<3;j++)
{
scanf("%d",&matrix2[i][j]);
}


}
for(i=0;i<3;i++)
{
for(j=0;j<3;j++)
{
for(k=0;k<3;k++)
{
sum[i][j]=matrix1[i][j]+matrix2[i][j];
}
} }
```

```
printf("Addition Of Two Matrices :\n");
for(i=0;i<3;i++) { for(j=0;j<3;j++) {
printf("%d\t",sum[i][j]);
}
printf("\n");
} break;
case 2 :
printf("Enter The Size Of Array : ");
scanf("%d",&n); printf("Enter The
Elements of Array :\n"); for(i=0;i<n;i++) {
scanf("%d",&arr[i]);
} max=arr[0];
min=arr[0];
for(i=1;i<n;i++)
{ if(arr[i]>max)
max=arr[i]; else
min=arr[i]; }
printf("Maximum Element : %d\n",max); printf("Minimum
Element : %d",min);
break; case
3 :
printf("Enter The Size Of Array : "); scanf("%d",&n);

printf("Enter The Elements Of Array :\n");
for(i=0;i<n;i++) { scanf("%d",&arr[i]);
}
printf("Enter Searching Element : ");
scanf("%d",&item); for(i=0;i<n;i++) {
if(arr[i]==item){ printf("Element Found At
Location : %d",i); break; } } if(i<=5)
printf("Element Not Found");
break; case
4 : exit(0);
default :
printf("Wrong Choice");
}
printf("\n\nDo You Want To Continue ? : ");
fflush(stdin); scanf("%c",&ans);
}
while(ans=='Y');
getch(); return 0;
}
```

Output :

Menu :

1. Addition Of Matrices
2. MaxMin
3. Linear Search

4. Exit
Enter Your Choice : 2
Enter The Size Of Array : 5
7
1
5

3
9
Maximum Element : 9
Minimum Element: 1
Do You Want To Continue ? : Y
Enter The Size Of Array : 5
6
0
4
2
8
Maximum Element : 8
Minimum Element: 0 Do You
Want To Continue ? : N **Viva**
Questions :

1) How do you perform the addition of two matrices ?
2) How do you find the maximum and minimum values in an array ? 3) Can you explain the linear search algorithm ? How does it work

PRACTICAL NO :7

Aim : Write a menu-driven program which has following options:
1. Find Length Of String
2. Copy One String To Another String
3. Concatenate Two Strings
4. Compare Two Strings
5. Exit

Program :

```
#include <stdio.h>
#include<conio.h>
#include<stdlib.h>
#include <string.h> int
findLength(char *str)
{ int length = 0; while
(str[length]!='\0')
{ length++; }
return length;
}
void copyString(char *dest,char *src)
{ int i = 0; while
(src[i]!='\0')
{
dest[i]=src[i];
i++; }
dest[i]='\0'; }
void concatenateStrings(char *str1,char *str2)
{ int i=0,j=0;
while(str1[i]!='\0')
{ i++;
}
while (str2[j]!='\0')
{

str1[i+j]=str2[j];
j++; }
str1[i+j]='\0'; }
int compareStrings(char *str1,char *str2)
{ int i = 0; while(str1[i]!='\0' &&
str2[i]!='\0')
{
```

```
if(str1[i]!=str2[i]) { break; }
i++; } if(str1[i]>str2[i])
return 1; else
if(str1[i]<str2[i]) return -1;
else return 0; } int main() {
int choice,result; char
ans,str1[100],str2[100];
clrscr(); printf("Menu:\n"); printf("\n1. Find
Length Of String"); printf("\n2. Copy One String
To Another String"); printf("\n3. Concatenate Two
Strings"); printf("\n4. Compare Two Strings");
printf("\n5. Exit\n"); printf("\n\nEnter Your
Choice: "); scanf("%d",&choice); do {
switch(choice) { case 1:
printf("Enter A String: ");

scanf("%s",str1); result=findLength(str1);
printf("\nLength Of The String: %d",result);
break; case 2:
printf("Enter The Source String: ");
scanf("%s",str1); copyString(str2,str1);
printf("\nDestination String : %s",str2);
break; case 3:
printf("Enter The First String: "); scanf("%s",str1);
printf("\nEnter The Second String: ");
scanf("%s",str2);
concatenateStrings(str1,str2);
printf("\nConcatenated String: %s",str1);
break; case 4:
printf("Enter The First String: ");
scanf("%s",str1); printf("\nEnter The
Second String: "); scanf("%s",str2);
result=compareStrings(str1, str2);
if(result==0) printf("\nStrings Are
Equal"); else printf("\nStrings Are
Not Equal"); break; case 5: exit(0);
default:
printf("Wrong Choice");
}
printf("\n\nDo You Want To Continue ? : ");
fflush(stdin); scanf("%c",&ans);
}
while(ans=='Y');
getch(); return 0;
}
```

Output :

Menu :
1. Find Length Of String
2. Copy One String To Another String
3. Concatenate Two Strings
4. Compare Two Strings
5. Exit
Enter Your Choice : 1
Enter A String : Programming
Length Of String : 11
Do You Want To Continue? : Y
Enter A String : Language
Length Of String : 8
Do You Want To Continue? : N **Viva Questions :**

1) What is a String ?
2) What are various string functions in C ?
3) What is the significance of the null terminator ('\0') in a string?

PRACTICAL NO : 8

Aim : Write a menu-driven program which has following options :

1. Factorial Of A Number

2. Fibonacci Series

3. Exit

Program :

```
#include<stdio.h>
#include<stdlib.h> long
factorial(int n)
{
int i;
long fact=1; for(i=1;i<=n;i++)
{ fact=
fact*i; }
return fact;
}
void fibonacci(int *n)
{ int
i,f1=0,f2=1,f3;
for(i=0;i<*n;i++)
{ f3=f1+f2; printf("%d ",f3); f1=f2;
f2=f3; } } int main() { int
choice,n,fact; char ans; clrscr();
printf("Menu :"); printf("\n1. Factorial
Of A Number"); printf("\n2.
Fibonacci Series"); printf("\n\nEnter
Your Choice : ");
scanf("%d",&choice); do

{ switch(choice)
{ case 1
:
printf("Enter A Positive Integer : ");
scanf("%d",&n);
fact=factorial(n); printf("Factorial
: %d",fact); break; case 2 :
printf("Enter The Number Of Terms To Be Displayed : ");
scanf("%d",&n); printf("Fibonacci Series : ");
fibonacci(&n); break; case 3 : exit(0); default :
printf("Wrong Choice");
}
printf("\n\nDo You Want To Continue ? : ");
fflush(stdin); scanf("%c",&ans);
```

```
} while(ans=='Y')
; getch(); return
0;
}
```

Output :

Menu :

1. Factorial Of A Number
2. Fibonacci Series
3. Exit

Enter Your Choice : 2

Enter The Number Of Terms To Be Displayed : 5

Fibonacci Series : 0 1 1 2 3 5

Do You Want To Continue? : Y

Enter The Number Of Terms To Be Displayed : 10

Fibonacci Series : 0 1 1 2 3 5 8 13 21 34

Do You Want To Continue? : N

Viva Questions :

1) How do you calculate the factorial of a number ?
2) How is the Fibonacci Series generated?
3) What is the difference between Iteration and Recursion ?

PRACTICAL NO : 9

Aim : Write a program to copy contents of one file to another file.

Program :

```
#include<stdio.h>
#include<stdlib.h> int
main()
{
FILE *fptr1,*fptr2; char
ch;
fptr1=fopen("abc.txt","r");
if(fptr1==NULL)
{
printf("Cannot Open File");
exit(1); }
fptr2=fopen("copy.txt","w");
if(fptr2==NULL)
{
printf("Cannot Open File");
exit(1); }
ch=fgetc(fptr1);
while(ch!=EOF)
{ fputc(ch,fptr2);
ch=fgetc(fptr1);
}
printf("Contents Of File Copied Successfully");
fclose(fptr1); fclose(fptr2); return 0;
}
```

Output :

Contents Of File Copied Successfully Viva
Questions :

1) What is a File ?
2) What are the different opening modes of a file ?
3) What is the significance of the EOF (End of File) marker in file operations ?

PRACTICAL NO :10

Aim : Write a program using structure to specify data on students.

Program :

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h> struct
Student
{ int roll_number;
char name[25]; char
department[25]; char
course[25]; int
year_of_joining;
};
void print_students_by_year(struct Student students[],int total_students,int year)
{ int i,f=0; printf("Students who joined in the year %d
:\n",year); for(i=0;i<total_students;i++)
{
if(students[i].year_of_joining==year)
{
printf("%s\n",students[i].name);
f++; } } if(f==0) {
printf("No students joined in year %d",year);
} }
void print_student_by_roll_number(struct Student students[],int total_students,int roll_number)
{ int i,f=0;
for(i=0;i<total_students;i++)
{
if(students[i].roll_number==roll_number)
{

printf("\nRoll Number : %d",students[i].roll_number);
printf("\nName : %s",students[i].name);
printf("\nDepartment : %s",students[i].department);
printf("\nCourse : %s",students[i].course); printf("\nYear Of
Joining : %d",students[i].year_of_joining); f++; break; }
} if(f==0)
{
printf("No student found with roll number %d",roll_number);
} } int
main() {
struct Student students[450]; int
i,year,choice,roll_number,total_students; char ans;
```

```
printf("Enter the number of students(max 450) : ");
scanf("%d",&total_students);
for(i=0;i<total_students;i++)
{
printf("\n\nEnter Details Of Student %d : ",i+1);
printf("\nRoll Number : ");
scanf("%d",&students[i].roll_number);
printf("\nName : ");
scanf("%s",&students[i].name);
printf("\nDepartment : ");
scanf("%s",&students[i].department);
printf("\nCourse : ");
scanf("%s",&students[i].course); printf("\nYear
Of Joining : ");
scanf("%d",&students[i].year_of_joining);
}
printf("\n\nMenu :"); printf("\n1. Print name of students
by year of joining"); printf("\n2. Print student data by
roll number"); printf("\n3. Exit"); printf("\n\nEnter
Your Choice : "); scanf("%d",&choice); do {

switch(choice)
{ case 1
:
printf("Enter the year of joining : ");
scanf("%d",&year);
print_students_by_year(students,total_students,year);
break; case 2 :
printf("Enter the roll number : "); scanf("%d",&roll_number);
print_student_by_roll_number(students,total_students,roll_number);
break; case 3 : exit(0);
break; default
:
printf("Wrong Choice");
}
printf("\n\nDo You Want To Continue ? : ");
fflush(stdin); scanf("%c",&ans);
} while(ans=='Y');
return 0;
}
```

Output :

Enter the number of students : 2

Enter Details Of Student 1 :

Roll Number : 12

Name : Kurnisha
Department : IT
Course : B.Tech.
Year Of Joining : 2023 Enter
Details Of Student 2 :
Roll Number : 3
Name : Akanksha
Department : IT Course
: B.Tech.
Year Of Joining : 2023

Menu :
1. Print name of students by year of joining
2. Print student data by roll number
3. Exit
Enter Your Choice : 2
Enter the roll number : 12
Roll Number : 12
Name : Kurnisha
Department : IT
Course : B.Tech.
Year Of Joining : 2023
Do You Want To Continue? : N

Viva Questions :

1) What is a Structure in C ?
2) What is a Function in C? How do you define and call a function?
3) What is the difference between a function declaration and a function definition?

PRACTICAL NO :11

Aim : Write a C graphics program to animate and move a car.

Program :

```
#include<stdio.h>
#include<graphics.h> main()
{
int gd=DETECT,gm;
int i;
char *bm;
initgraph(&gd,&gm,"C:\\TURBOC3\\bgi");
setbkcolor(BLUE); setcolor(RED);
moveto(2,220); lineto(30,220);
circle(40,220,10); arc(40,220,0,180,12);
moveto(50,220); lineto(90,220);
circle(100,220,10); arc(100,220,0,180,12);
moveto(110,220); lineto(140,220);
lineto(130,175); lineto(95,160); lineto(85,140);
lineto(45,138); lineto(25,155); lineto(5,158);
lineto(2,220); putpixel(40,220,RED);
putpixel(100,220,RED); bm=(char *)
malloc(imagesize(1,135,145,230));
//rectangle(439,200,700,300); getimage(1,135,145,230,bm);

for(i=1;i<500;i++) {
// if(i==300){
// printf("Accident");
// break;
//}
putimage(i,135,bm,COPY_PUT); delay(2);
}
outtextxy(350,400,"PRESS ANY KEY ...");
getch(); closegraph();
}
```

Output :

Viva Questions :

1) Which graphics libraries have you used in C?
2) How do you initialize the graphics mode in a BGI program ? 3) Can you explain the purpose of the initgraph() function ?