



Course Code : BCSL-021

Course Title : C Language Programming

Assignment Number : BCA(2)/L-021/Assignment/16-17

Maximum Marks : 50 Weightage : 25%

Last Dates for Submission : 15th October, 2016 (For July 2016 Session)

15th April, 2017 (For January 2017 Session)

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1. Write a C program to generate Pascal's triangle. (5 Marks)*Ans:*

#include<stdio.h>

long factorial(int);

int main()

{

int i, n, c;

printf("How many rows you want to show in pascal triangle?\n");

scanf("%d",&n);

for (i = 0 ; i < n ; i++)

{

for (c = 0 ; c <= (n - i - 2) ; c++)

printf(" ");

for(c = 0 ; c <= i ; c++)

printf("%ld ",factorial(i)/(factorial(c)*factorial(i-c)));

printf("\n");

}

return 0;

}

long factorial(int n)

{

int c;

long result = 1;

for(c = 1 ; c <= n ; c++)

result = result*c;

return (result);

}

2. Write a C Program to find the surface area and the volume of a sphere. (Surface Area = $4 \pi r^2$ and Volume = $\frac{4}{3} \pi r^3$) (5 Marks)*Ans:*

#include <stdio.h>

#include <math.h>

int main()

{



```
float radius;  
float surface_area, volume;  
  
printf("Enter radius of the sphere : \n");  
scanf("%f", &radius);  
surface_area = 4 * (22/7) * radius * radius;  
volume = (4.0/3) * (22/7) * radius * radius * radius;  
printf("Surface area of sphere is: %.3f", surface_area);  
printf("\n Volume of sphere is : %.3f", volume);  
return 0;  
}
```

3. Write a C program to find whether the given matrix is symmetric or not. (5 Marks)

Ans:

```
#include<conio.h>  
#include<stdio.h>  
void main()  
{  
    int a[10][10],i,j,m;  
    clrscr();  
    printf("Enter order of square matrix: ");  
    scanf("%d",&m);  
    for(i=1;i<=m;i++)  
    {  
        for(j=1;j<=m;j++)  
        {  
            printf("Enter value of a[%d][%d]: ",i,j);  
            scanf("%d",&a[i][j]);  
        }  
    }  
    for(i=1;i<=m;i++)  
    {  
        for(j=1;j<=m;j++)  
        {  
            if(a[i][j]!=a[j][i])  
            {  
                printf("\n\nMatrix is not symmetric");  
                getch();  
                exit(0);  
            }  
        }  
    }  
    printf("\n\nMatrix is symmetric");  
    getch();  
}
```

4. Write a interactive C program to create records of 15 students, where each record has fields name, rollno, GPA and fees. Write a function *calcfee* () to reduce the fees of



those students who have obtained GPA greater than 9.0 by 25% of the original fees, 10% fee concession if GPA is between 8.0 and 8.9 and 5% concession if the GPA is between 7.5 and 7.9. Display all the records before and after updation. (5 Marks)

Ans:

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

```
#define SIZE 50
```

```
struct student
```

```
{
```

```
    char name[30];
```

```
    int rollno;
```

```
    int gpa,fee;
```

```
};
```

```
void calcfee(struct student st[])
```

```
{
```

```
    for (i = 0; i < n; i++)
```

```
    {
```

```
        if(st[i].gpa>=9.0)
```

```
        st[i].fee=st[i].fee-(st[i].fee*0.25);
```

```
        else if(st[i].gpa<=8.9 && st[i].gpa<8.0)
```

```
        {
```

```
            St[i].fee=st[i].fee-(st[i].fee*0.05);
```

```
            printf("Total Fee=%d",st[i].fee);
```

```
            printf("roll no=%d", &st[i].rollno);
```

```
        }
```

```
    }
```

```
}
```

```
void main()
```

```
{
```

```
    int i, j, max, count, total, n, a[SIZE], ni;
```

```
    struct student st;
```

```
    clrscr();
```

```
    printf("Enter how many students: ");
```

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

```
    for (i = 0; i < n; i++)
```

```
    {
```

```
        printf("\nEnter details name, rollno,gpa,fee");
```

```
        scanf("%s", &st[i].name);
```

```
        scanf("%d", &st[i].rollno);
```

```
        scanf("%d", &st[i].gpa);
```

```
        scanf("%d", &st[i].fee);
```

```
    }
```

```
    Printf("\nPrint Before update\n")
```

```
    for (i = 0; i < n; i++)
```

```
    {
```

```
        printf("roll no=%d", &st[i].rollno);
```

```
        printf("GPA=%d", &st[i].gpa);
```



```
printf("GPA=%d", &st[i].gpa);  
printf("fee=%d", &st[i].fee);  
calcfee(st[i]);
```

```
}
```

```
Printf(update data:\n")
```

```
getch();  
}
```

5. Using pointers, write a function that receives a string and a character as argument. Delete all occurrences of this character in the string. The function should return corrected string with no holes/spaces. (5 Marks)

Ans:

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

```
void del(char str[], char ch);
```

```
void main() {  
    char str[10];  
    char ch;
```

```
    printf("\nEnter the string : ");  
    gets(str);
```

```
    printf("\nEnter character which you want to delete : ");  
    scanf("%c", &ch);
```

```
    del(str, ch);  
    getch();  
}
```

```
void del(char str[], char ch) {  
    int i, j = 0;  
    int size;  
    char ch1;  
    char str1[10];
```

```
    size = strlen(str);
```

```
    for (i = 0; i < size; i++) {  
        if (str[i] != ch) {  
            ch1 = str[i];  
            str1[j] = ch1;  
            j++;
```



```
}  
}  
str1[j] = '\0';  
  
printf("\ncorrected string is : %s", str1);  
}
```

6. Define a structure that describes a hotel. It should have members that include the name, address, star(5 star, 3 star or 2 star), average room charge and number of rooms.

Write a function to perform the following operations:

(i) To print out hotels of a given grade in order of charges.

(ii) To print out hotels with room charges less than a given value.

(5 Marks)

Ans:

```
#include <stdio.h>  
struct hotel  
{  
    char name[20];  
    char add[20];  
    int grade;  
    int arc;  
    int rooms;  
};  
void output();  
void out();  
struct hotel inn[]={  
    {"PLAZA","G-99,DELHI",3,4500,50},  
    {"MYUR","E-45,NOIDA",4,5000,100},  
    {"RAJDOOT","H-44,DELHI",2,4000,50},  
    {"SAMRATH","B-75,BOMBAY",5,6000,200},  
    {"SURYA","A-77,NOIDA",1,3500,150}  
};  
void main()  
{  
    int go;  
    clrscr();  
    printf("Enter 1 for grade search\n");  
    printf("Enter 2 to search by charge:");  
    scanf("%d",&go);  
    switch(go)  
    {  
        case 1: output();  
        break;  
        case 2: out();  
        break;  
        default:printf("Wrong input");  
        break;  
    }  
    getch();  
}  
void output()  
{
```



```
int gr,i;
printf("Enter Grade 1 to 5:");
scanf("%d",&gr);
if(gr>=1||gr<=5)
{
for(i=0;i<=4;i++)
{
if(inn[i].grade==gr)
printf("Hotel Name: %s\nAddress:%s\nGrade:%d\nAverage Room charge:%d\n\
Number of Rooms:%d",inn[i].name,inn[i].add,inn[i].grade,inn[i].arc,inn[i].rooms);
}
}
else
printf("Wrong grade input!");
}
void out()
{
int ch,i=0;
printf("Enter the Room charges not greater than 6000:");
scanf("%d",&ch);
while(i<5)
{
if(inn[i].arc<ch)
printf("Hotel Name: %s\nAddress:%s\nGrade:%d\nAverage Room charge:%d\n\
Number of Rooms:%d\n",inn[i].name,inn[i].add,inn[i].grade,inn[i].arc,inn[i].rooms);
i++;
}}
}
```

7. Write an interactive C program which copies one file to another. (5 Marks)

Ans:

```
#include<stdio.h>
void main()
{
char x;
FILE *p,*y;
clrscr();
p=fopen("abc.txt","r");
y=fopen("xyz.txt","w");

do
{
x=fgetc(p);
putchar(x);
fputc(x,y);
}while(x!=eof());
getch();
}
```

8. Write an interactive C program to reverse the first n characters in a file.:

Ans:

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



```
#include <conio.h>
#include <string.h>
#include <process.h>
```

```
void main(int argc, char *argv[])
```

```
{
    char a[15];
    char s[20];
    char n;
    int k;
    int j=0;
    int i;
    int len;
    FILE *fp;
```

```
if(argc!=3)
{
    puts("Improper number of arguments.");
    exit(0);
}
fp = fopen(argv[1],"r");
if(fp == NULL)
{
    puts("File cannot be opened.");
    exit(0);
}
```

```
k=*argv[2]-48;
n = fread(a,1,k,fp);
a[n]='\0';
len=strlen(a);
for(i=len-1;i>=0;i--)
{
    s[j]=a[i];
    printf("%c",s[j]);
    j=j+1;
}
s[j+1]='\0';
getch();
}/
```