

Week-2

1.BM19CS052

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- Q3. Write a C program to accept a number n from the user and print n rows of output as given below if n=4.

1

2 3

4 5 6

7 8 9 10

```
⇒ #include <stdio.h>
```

```
int main ()
```

```
{
```

```
    int n, i, j, count = 0;
```

```
    printf ("Enter the number of rows: ");
```

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

```
    for (i=1; i<=n; i++)
```

```
        printf ("\n");
```

```
        for (j=1; j<=i; j++)
```

```
            count++;
```

```
            printf ("%d", count);
```

```
}
```

```
return 0;
```

(7)

Q4. Write a C program to accept the CIE marks (out of 50) and SEE marks (out of 100) of a student and print his/her grade.

```
#include <stdio.h>
void main()
{
    int internal_marks, external_marks, x, total_marks;
    printf("Enter the CIE and SEE marks respectively: ");
    scanf("%d %d", &internal_marks, &external_marks);
    x = (external_marks / 2);
    total_marks = x + internal_marks;
    if (total_marks < 100 && total_marks >= 90)
    {
        printf("Grade is S");
    }
    else if (total_marks < 90 && total_marks >= 80)
    {
        printf("Grade is A");
    }
    else if (total_marks < 80 && total_marks >= 70)
    {
        printf("Grade is B");
    }
    else if (total_marks < 70 && total_marks >= 60)
    {
        printf("Grade is C");
    }
}
```

```

    else if ((total_marks <= 60 && total_marks >= 40)
    {
        else printf ("Grade is D");
    }
    else
    {
        printf ("Grade is F");
    }
}

```

- Q6. Write a C program which prints the area and Volume of any one of the given shapes given below. Accept the choice of the shape appropriate inputs from the user, calculate and display the area and the volume of the same. Repeat this with different shapes till the user wishes to stop.

Cylinder	Area : $A = 2\pi rh + 2\pi r^2$	Volume = $\pi r^2 h$
Cone	Area : $A = \pi r \sqrt{r^2 + h^2}$	Volume = $\pi r^2 h / 3$
Sphere	Area : $A = 4\pi r^2$	Volume = $V = (4/3) \pi r^3$

\Rightarrow #include <stdio.h>

#include <math.h>

int main()

{

float r, h, area, volume;

int opt;

char ch;

const float pi = 3.14;

do {

```

printf ("For which shape do you want
to calculate Area and Volume : \n");
printf ("\n OPTIONS : 1-Cylinder \n 2-Cone
        \n 3-Sphere \n");
scanf ("%d", &opt);
switch (opt)
{

```

Case 1:

```

printf ("Enter the radius of cylinder : ");
scanf ("%f", &r);
printf ("Enter the height of cylinder : ");
scanf ("%f", &h);
area = (2 * pi * r * h) + (2 * pi * r * r);
volume = pi * r * r * h;
printf ("Area : %f", area);
printf ("Volume : %f", volume);
break;

```

Case 2:

```

printf ("Enter the radius . of cone : ");
scanf ("%f", &r);
printf ("Enter the height of cone : ");
scanf ("%f", &h);
area = pi * r * (r + sqrt ((h * h + r * r)));
volume = pi * r * r * (h / 3);
printf ("Area : %f", area);
printf ("Volume : %f", volume);
break;

```

Case 3:

```

printf ("Enter the radius of sphere : ");
scanf ("%f", &r);
area = 4 * pi * r * r;

```

```

Volume = (4/3) * pi * r * r * r;
printf("In Area : %.f ", area);
printf("In Volume : %.f ", volume);
break;
default;
printf("Enter a valid option (1, 2, 3, 4, 5, 6, 7, 8, 9, 0) ");
break;
}

printf("Do you want to repeat the operation\nY/N : ");
scanf("%c", &ch);
}

while (ch == 'y' || ch == 'Y');
return 0;
}

```

Q7. Write a C program to count the number of students registered for three elective courses. Accept the names of n students; their choice of the elective (Say, the elective courses offered are Internet of things, Advanced Java and J2EE and Advanced Data Structures)

Include the following operations :-

1. Accept the say x from the user. Display the names of the students who have opted for elective x.
2. Count and display the total number of students present in each elective.
3. If count is less than 30, inform that the course will not be floated and ask the student who have opted the course to result their election.

from the other too. Count and display it.
Count again.

4. Display the name of the student in each elective.

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

struct student {

{

char name [40];

int elective;

} ;

int main ()

{

int i, j, choice, n, least, temp;

int count [3] = { 0, 0, 0 };

char elective [3] [40] = { "IOT", "Advanced Java",
"J2EE" };

printf ("Enter number of students : ");

scanf ("%d", &n);

struct Student student [n];

for (i=0; i<3; i++)

{

printf ("\nEnter the name of student ?");

scanf ("%s", student [i]. name);

printf ("\nEnter the choice : ");

scanf ("%d", &student [i]. elective);

}

(12)

```
{ for (i=0; i<n; i++)
{
    if (student[i].elective == 1)
    {
        count[0]++;
    }
    else if (student[i].elective == 2)
    {
        count[1]++;
    }
    else
    {
        count[2]++;
    }
}
printf ("\n Operation 1 : \n");
printf ("Enter the choice of elective you want to
get the list for: \n");
int x;
scanf ("%d", &x);
for (i=0; i<n; i++)
{
    if (student[i].elective == x)
    {
        printf (> "%s\n", student[i].name);
    }
}
printf ("Operation 2 \n");
printf ("Number of students in %s elective: %d\n",
electives[0], count[0]);}
```

```
printf ("Number of students in Y.S electives: %d\n", electives[1], count[1]);  
printf ("Number of students in Y.S electives:  
Y.D %d", electives[2], count[2]);
```

```
printf ("Operation 3\n");
```

```
if (count[0] < 3)
```

```
{  
    printf ("Y.S students must choose another  
elective due to less number %d", electives[0]);
```

```
    printf ("choose between Advanced Java(2)  
and J2EE(3)\n");
```

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

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

```
{
```

```
    if (student[i].elective == 1)
```

```
{
```

```
        student[i].elective = choice;
```

```
        count[0] --;
```

```
        count[choice - 1]++;
```

```
}
```

```
}
```

```
}
```

```
if (count[1] < 3)
```

```
{
```

```
    printf ("Y.S students must choose another  
elective due to less number %d",  
elective[1]);
```

```
    printf ("choose between TOT(1) and J2EE(3)\n");
```

```
scanf ("%d", &choice);
for (i=0; i<n; i++)
```

```
{ if (student[i].elective == 2)
```

```
{ student[i].elective = choice;
```

```
count[0]--;
```

```
count[choice-1]++;
```

```
if (count[2]<3)
```

```
{ printf ("%.s. Students must choose another
```

```
elective due to less number (%d", elective[2]);
```

```
printf ("choose between Advanced Java (1)
```

```
and J2EE (2)\n");
```

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

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

```
if (student[i].elective == 3)
```

```
{ student[i].elective = choice;
```

```
count[0]--;
```

```
count[choice-1]++;
```

```
}
```

```
}
```

```
printf ("Number of students in %.s. elective : %d\n", elective[0], count[0]);
```

```
printf ("Number of students in Y.S election : %d",  
    ", electives [1], count [1]);  
printf ("Number of students in Y.S election  
of Y.D.I.N", electives [2], count [2]);  
  
printf ("Operation 4\n");  
  
for (i=0; i<3; i++)  
{  
    printf ("\n Students in Y.S : %d", electives [i]);  
    for (j=0; j<n; j++)  
    {  
        if (student [j].elective == (i+1))  
        {  
            printf (" > %.5s\n", student [j].name);  
        }  
    }  
}  
return 0;  
}
```