

Practice Programs for OOPS & AB

classmate

Week - 2



Program number → 3

Write a C/Java 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
  
```

public class Pattern
{

```

    public static void main(String[] args) {
        int i, j, k = 1;
        for (i = 1; i <= 4; i++) {
            for (j = 1; j < i; j++) {
                System.out.print(k++ + " ");
            }
            System.out.println();
        }
    }
  
```

Program number → 4

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. Use else if

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

```
void main() {
```

```
    int marks1, marks2, marks;
```

```
    printf("Enter your SEE marks");
```

```
    if (marks1 < 0 || marks1 > 50)
```

```
{
```

```
    printf("Wrong Entry");
```

```
}
```

3

```
else { scanf(".1.d", &marks1);
```

```
}
```

3

```
    printf("Enter your CIE marks");
```

```
    scanf(".1.d", &marks2);
```

```
    marks = marks1 + (marks2 / 2);
```

```
    if (marks < 50) {
```

```
        printf("Grade F"); }
```

```
    else if (marks >= 50 && marks < 60)
```

```
{ printf("Grade D"); }
```

```
    } else if (marks >= 60 && marks < 70)
```

```
{ printf("Grade C"); }
```

```
    } else if (marks >= 70 && marks < 80)
```

```
{ printf("Grade B"); }
```

```
    } else if (marks >= 80 && marks < 90)
```

```
{ printf("Grade A"); }
```

```
    } else
```

```
{ printf("Grade A+"); }
```

```
    }
```

Program → 6.

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.

$$\text{Cylinder : Area: } A = 2\pi rh + 2\pi r^2 \quad \text{Volume: } V = \pi r^2 h$$

$$\text{cone : Area: } A = \pi r(r + \sqrt{r^2 + h^2}) \quad \text{Volume: } V = \frac{1}{3}\pi r^2 h$$

$$\text{sphere : Area: } A = 4\pi r^2 \quad \text{Volume: } V = \frac{4}{3}\pi r^3$$

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

void main()
{
    float area, volume, r, rad;
    int choice, i = 0, a;
    while (i == 0)
    {
        printf("1. For area and volume of cylinder\n");
        printf("2. For area and volume of cone\n");
        printf("3. For area and volume of sphere\n");
        printf("%d", &choice);
        switch (choice)
        {
            case 1:
                printf("Enter radius and height:\n");
                scanf("%f", &rad);
```

```
                printf("Enter height: ");
                scanf("%f", &h);
```

```
scanf ("%f", &f);
```

```
area = 2 * 3.14 * rad * (rad + h);
```

```
volume = 3.14 * rad * rad * h;
```

```
break;
```

case 2:

```
printf ("Enter radius and height : ");
```

```
scanf ("%f", &rad);
```

```
scanf ("%f", &h);
```

```
volume = (3.14 * rad * rad * h) / 3;
```

```
area = (22 / 7) * rad * (rad + sqrt (rad * rad + h * h));
```

```
break;
```

case 3:

```
printf ("Enter radius and height : ");
```

```
scanf
```

```
scanf
```

```
volume = (4 * 3.14 * rad * rad * rad) / 3;
```

```
area = 4 * 3.14 * rad * rad;
```

```
break;
```

default:

```
printf ("Option not available \n");
```

```
break;
```

}

```
printf ("The area is : %f \n", area);
```

```
printf ("The volume is : %f \n", volume);
```

```
printf ("Enter 0 to exit and 1 to continue \n");
```

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

```
if (a == 0)
```

{}

$i = 1;$

$\text{else if } (a == 1)$

i

$i = 0;$

3

3

$\text{else } \text{if } (a > 1) \text{ then}$

$\text{if } (a < 0) \text{ then}$

program - 5

Write a Java program to print the prime numbers between 1 to 100.

```
public class Prime
{
    public static void main(String[] args)
    {
        int m = 0, n = 0, i = 1, j = 1;
        while (n <= 25)
        {
            j = 1;
            m = 0;
            while (j <= i)
            {
                if (i % j == 0)
                    m++;
                j++;
            }
            if (m == 2)
            {
                System.out.printf("%d\n", i);
                n++;
            }
            i++;
        }
    }
}
```

program 7.

Write a C program to count the number of students registered for three elective courses. Accept the name of n students, their choice of the elective (Internet of Things, Advanced Java and J2EE and Advanced Data Structure).

Include:

1. Accept say n from the user. Display the names of the students who have opted for elective α .
2. Count and display the total number of students present.
3. If count is less than 30, inform the course will not be floated and ask other n . Count & display counts again.
4. Display the name of the students in each electives.

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

```
struct course
```

```
{
```

```
    char name[20];
}
```

```
int main()
```

```
{
```

```
    struct course s[3][20];
```

```
    int n, i, j, c[3] = {0, 0, 0}, choice;
```

```
    char cn[3][10] = {"Internet of Things", "JAVA", "DS"};
```

```

printf("Enter the total number of students: \n");
scanf("%d", &n);
printf("Enter one needed information: \n");
for(i=0; i<n; i++)
{
    printf("----- \n");
    printf("Choose one from the electives: \n");
    printf("1. INTERNET OF THINGS IN 2. ADVANCED\n");
    printf("JAVA AND J2EE IN 3. ADVANCED DATA STRUCTURES");
    scanf("%d", &choice);
    if(choice > 3 || choice < 0)
    {
        printf("It is an invalid choice! \n");
        continue;
    }
    printf("Enter the name of the student : .d\n");
    scanf("%s", &stchoice[i][c[choice-1].name]);
    c[i][choice-1]++;
}
disp:
for(i=0; i<3; i++)
{
    if(c[i] >= 0)
        printf("List of students in the course %.s: \n",
               cn[i]);
    for(j=0; j<c[i]; j++)
}

```

```

3 printf("%d", s[i][j].name);
3 printf("Number of students in the course %s
        is %d", cn[i], j);
3 for (i=0; i<3; i++) {
    if (c[i]<3 && c[i] != -1) {
        printf("The number of people is less than 3 in
               course \"%s\", so the students in the course %s
               please change the course: \n", cn[i], cn[i]);
        for (j=0; j < c[i]; j++)
            printf("Enter the course code: \n");
        scanf("%d", &choice);
        if (choice == i+1) {
            printf("Enter other option of course! \n");
            continue;
        }
        printf("Enter student's name: \n");
        scanf("%s", &s[choice-1][c[choice-1]].name);
        c[choice-1]++;
    }
    n = c[i];
    c[i] = -1;
    goto disp;
}
return 0;

```