

```
8
9 #include <stdio.h>
10 #include<math.h>
11 float sumaver(int x,int y)
12 {
13     int sum;
14     sum=x+y;
15     printf("sum= %d\n",sum);
16     return (sum/2);
17 }
18 void printeven(int w,int z)
19 {
20     printf("even numbers in between are\t");
21     int t;
22     if(w>z)
23     {
24         t=w;
25         w=z;
26         z=t;
27     }
28     if((w%2)==0)
29     {
30         w=w+2;
31         while(w<z)
32         {
33             printf("%d\t",w);
34             w=w+2;
35         }
36     }
37 }
38 else
39 {
40     w=w+1;
41     while(w<z)
42     {
43         printf("%d\t",w);
44         w=w+1;
45     }
46 }
47 }
48 }
49 int main()
```

```
46     }
47 }
48
49 }
50 int main()
51 {
52     int a,b,c;
53     float avg;
54     printf("enter three numbers");
55     scanf("%d %d %d",&a,&b,&c);
56     if(a<b)
57     {
58         if(a<c)
59         {
60             avg=sumaver(b,c);
61             printeven(b,c);
62         }
63     }
64     if(b<a)
65     {
66         if(b<c)
67         {
68             avg=sumaver(a,c);
69             printeven(a,c);
70         }
71     }
72     if(c<a)
73     {
74         if(c<b)
75         {
76             avg=sumaver(a,b);
77             printeven(a,b);
78         }
79     }
80     printf("average= %f\n",avg);
81     return 0;
82 }
83
```

```
v x s
enter three numbers1 10 20
sum= 30
even numbers in between are    12      14      16      18      average= 15.000000
I
...Program finished with exit code 0
Press ENTER to exit console.
```

15/9/20

Ex. no. 2

Week 1

- 2) Write a C program to accept 3 numbers from the user. Find the greater two among the three and pass them as parameters to the user defined functions , a) sumaver b) printeven.

A)

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

```
int main()
```

{

```
int a, b, c;
```

```
float avg;
```

```
printf("Enter three numbers");
```

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

```
if (a < b)
```

```
{ if (a < c)
```

```
{ avg = sumaver (b, c);
```

```
printf("%f", avg); printeven(b, c);
```

}

```
if (b < a)
```

```
{ if (b < c)
```

```
avg = sumaver (a, c);
```

```
printeven(a, c);
```

```
if (c < a)
```

```
{ if (c < b)
```

```
avg = sumaver (a, b);
```

```
printeven(a, b);
```

```
    printf ("%d\n", avg);  
    return 0;
```

```
}
```

```
float sumavg ( int x , int y )  
{
```

```
    int sum ;
```

```
    sum = x + y ;
```

```
    printf ("%d\n", sum);
```

```
    return ( sum / 2 );
```

```
}
```

```
void pointeren ( int w , int z )
```

```
{
```

```
if ((w % 2) == 0)
```

```
{ w = w + 2 ; }
```

```
while ( w <= z )
```

```
{ printf ("%d", w );
```

```
}
```

```
}
```

```
else {
```

```
    w = w + 1 ;
```

```
    while ( w <= z )
```

```
{
```

```
    w = w + 1 ;
```

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

```
}
```

```
    return 0 ;
```

```
}
```

15/9/20 Ex. no - 1

Week 1

- 1) Write a menu driven C program to design a simple calculator which solves 10 operations, 4 - arithmetic , 4 relational and any two other.

The program should loop till the user wishes to stop.

A) `#include <stdio.h>`

`#include <math.h>`

`int main()`

`do { int a, b, c, d;`

`printf (" Choose an option\n`

`1. Addition\n`

`2. Subtraction\n`

`3. Multiplication\n`

`4. division\n`

`5. Lesser than \n`

`6. greater than \n`

`7. Equal To \n`

`8. Not equal to \n`

`9. Remainder \n`

`10. greater than & equal to \n`

`11. Exit \n ");`

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

switch (a)

```
printf("Enter two numbers");
scanf("%d %d", &b, &c);
```

switch (a)

```
{  
    Case 1: { printf("%d", b+c);  
    Case 2: { printf("%d", b-c);  
    Case 3: { printf("%d", b*c);  
    Case 4: { printf("%d", b/c);  
            ; break;  
    Case 5: { printf("%d",  
            if (b < c)  
                d = 1;  
            else d = 0;  
            printf("%d", d);  
            ; break;  
    }  
}
```

Case 6: { if (b > c)

```
        d = 1;  
    else d = 0;  
    printf("%d", d);  
    ; break;
```

Case 7: { if (b == c)

```
        d = 1;  
    else d = 0;  
    printf("%d", d);  
    ; break;
```

Case 8: { if (b != c)

```
        d = 1;  
    else d = 0;
```

```
    printf("%d", d);  
    } break;
```

Case 9: printf("%d", b % c);

Case 10: {

```
    if (b >= c)  
        d = 1;  
    else
```

```
        d = 0;
```

```
    printf("%d", d);  
    } break;
```

Case 11: printf("exit");

```
} while (a != 11);
```

return 0;

}


```
34
35
36
37
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49
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51
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66
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70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
```

```
case 4:{  
    printf("%d\n",b/c);  
    break;  
}  
case 5:{  
    if(b<c)  
        d=1;  
    else d=0;  
    printf("%d\n",d);  
    break;  
}  
case 6:{  
    if(b>c)  
        d=1;  
    else d=0;  
    printf("%d\n",d);  
    break;  
}  
case 7:{  
    if(b==c)  
        d=1;  
    else d=0;  
    printf("%d\n",d);  
    break;  
}  
case 8:{  
    if(b!=c)  
        d=1;  
    else d=0;  
    printf("%d\n",d);  
    break;  
}  
case 9:  
    printf("%d\n",b%c);  
    break;  
case 10:{  
    if(b>=c)  
        d=1;  
    else d=0;  
    printf("%d\n",d);  
    break;  
}  
case 11: printf("exit\n");  
}  
}while(a!=11);  
  
return 0;  
}
```

```
43     printf("%d\n",d);
44     break;
45 }

choose an option
1.addition   I
2.subtraction
3.multiplication
4.division
5.lesser than
6.greater than
7.equalto
8.not equal to
9.remainder
10.greater than or equal to
11.exit

1
enter the two numbers2 3
5
choose an option
1.addition
2.subtraction
3.multiplication
4.division
5.lesser than
6.greater than
7.equalto
8.not equal to
9.remainder
10.greater than or equal to
11.exit

11
exit
```

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

22/9/20

1BN19CS008

Aishwarya V

Week 2

- 3) Write C program to accept 'n' from the user and print n rows of output as given below

n = 4

1			
2	3		
4	5	6	
7	8	9	10

A) #include <stdio.h>

int main()

{

int n, i, j, m;

printf("Enter the no of rows");

scanf("%d", &n);

i = 1;

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

{

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

{

if (m <= j)

{

printf("%d\t", i);

i++;

{

printf("\n");

{

return 0;

{

4) Write C program to accept CIE marks (out of 50) of a student and print his/her grade. Use if ... else if ladder.

A) #include <stdio.h>

int main()

{

int m

printf ("Enter the marks");

scanf ("%d", &m);

if ($m \geq 90$)

{

printf ("grade = A+\n")

}

else if ($m \geq 80$)

printf ("A grade");

else if ($m \geq 70$)

printf ("B grade");

else if ($m \geq 60$)

printf ("C grade");

else if ($m \geq 50$)

printf ("D grade");

else if ($m \geq 40$)

printf ("E grade");

else printf ("FAIL");

return 0;

}

5) Write a C prog. to print the prime numbers between given two integers (inclusive). Accept from user.

A) `#include <stdio.h>`



```
int main()
```

```
{
```

```
    int a, b, c, i, j;
```

```
    printf("Enter two numbers");
```

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

```
    for(i=a; i<=b; i++)
```

```
{
```

```
        if (i==1 || i==0)
```

```
            continue;
```

```
c=1;
```

```
        for(j=2; j<=i/2; ++j)
```

```
{
```

```
            if (i%j == 0)
```

```
{
```

```
c=0;
```

```
break;
```

```
}
```

```
if (c == 1)
```

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

```
}
```

```
return 0;
```

```
}
```

6) Prints area & volume of shapes, until user wants to stop.

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

`int main()`

`{`

`int a; float area, volume, r, h;`

`do {`
`printf ("Which shape 1. Cylinder\n", 4. STOP.`
`2. Cone \n . 3. sphere \n ");`

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

`while (a != 4)`

`}`

`switch (a)`

`{`

`Case 1 : } printf ("input radius and height");`

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

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

`volume = (3.14 * r * r * h);`

`Break;`

`Case 2 : {`

`printf ("input radius and height");`

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

`area = 3.14 * r * (r + sqrt((h * h) + (r * r)));`

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

`Break;`

```

Case 3: { pointf("input radius");
    scanf("%d", &r);
    area = 4 * 3.14 * r * r;
    volume = (3.14 * r * r * r * 4) / 3;
    break;
}

```

```

} pointf("the area = %f\n", area);
pointf("the volume = %f\n", volume);
} while (a != 4);
return 0;
}

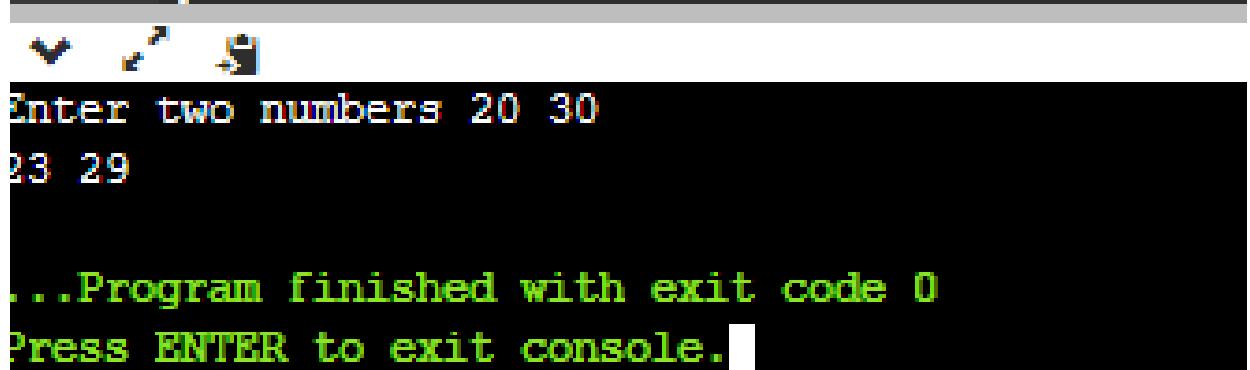
```

- 7) Count the no. of students registered for 3 elective courses. Accept names of n students, their choice of the elective.
1. Accept say x from user. Display names of students who opted for elective x.
 2. Count and display the total no. of students in each elective.
 3. if count less than 5, inform the course will not be floated and ask the students who have opted the course to reselect their electives from the other two. Count and display the counts again
 4. Display the name of students in each elective.

```
10 #include<math.h>
11
12 int main()
13 {
14     int a;
15     float area,volume,r,h;
16     do
17     {
18
19         printf("which shape 1.cylinder\n 2.cone\n 3.sphere\n 4.stop\n");
20         scanf("%d",&a);
21         switch (a)
22         {
23             case 1:
24             {
25                 printf("input radius and height\t");
26                 scanf("%f %f",&r,&h);
27                 area=(2*3.14*r*h)+(2*3.14*r*r);
28                 volume=3.14*r*r*h;
29                 break;
30             }
31             case 2:
32             {
33                 printf("input radius and height\t");
34                 scanf("%f %f",&r,&h);
35                 area=3.14*r*(r+sqrt((h*h)+(r*r)));
36                 volume=(3.14*r*r*h)/3;
37                 break;
38             }
39             case 3:
40             {
41                 printf("input radius\t");
42                 scanf("%f",&r);
43                 area=4*3.14*r*r;
44                 volume=3.14*r*r*r*4/3;
45                 break;
46             }
47         }
48         if(a!=4)
49         {
50             printf("the area=%f\n",area);
51             printf("the voloume=%f\n",volume);
52         }
53     }while(a!=4);
54
55
56     return 0;
57 }
```

```
which shape 1.cylinder  
2.cone  
3.sphere  
4.stop  
1  
input radius and height 30 40  
the area=13188.000000  
the volume=113040.000000  
which shape 1.cylinder  
2.cone  
3.sphere  
4.stop  
4  
...Program finished with exit code 0  
Press ENTER to exit console.
```

```
8 #include <stdio.h>
9
10 int main()
11 {
12
13     int a, b, c, i, j;
14     printf("Enter two numbers ");
15     scanf("%d %d", &a, &b);
16     for (i = a; i <= b; i++)
17     {
18
19         if (i == 1 || i == 0)
20             continue;
21
22
23         c = 1;
24
25         for (j = 2; j <= i / 2; ++j)
26         {
27             if (i % j == 0) {
28                 c = 0;
29                 break;
30             }
31         }
32
33
34         if (c == 1)
35             printf("%d ", i);
36     }
37
38     return 0;
39 }
```



```
Enter two numbers 20 30
23 29

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

```
8
9 #include <stdio.h>
10
11 int main()
12 {
13     int m ;
14     printf("the marks out of 100\t");
15     scanf("%d",&m);
16     if(m>=90)
17         printf("S grade");
18     else if(m>=80)
19         printf("A grade");
20     else if(m>=70)
21         printf("B grade");
22     else if(m>=60)
23         printf("C grade");
24     else if(m>=50)
25         printf("D grade");
26     else if(m>=40)
27         printf("E grade");
28     else printf("FAIL");
29
30
31     return 0;
32 }
33
```

the marks out of 100 50
D grade

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

```
9 #include <stdio.h>
10
11 int main()
12 {
13     int n,i,j,m;
14     printf("enter the number\t");
15     scanf("%d",&n);
16     i=1;
17     for(j=0;j<n;j++)
18     {
19         for(m=0;m<n;m++)
20         {
21             if(m<=j)
22             {
23                 printf("%d\t",i);
24                 i++;
25             }
26         }
27         printf("\n");
28     }
29
30     return 0;
31 }
32
```

```
▼ ↵ ⌂
enter the number      5
1
2      3
4      5      6
7      8      9      10
11     12     13     14      15
```

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

- 7) Count the no. of students registered for 3 elective courses. Accept names of n students, their choice of the elective.
- (*)
1. Accept say x from user. Display names of students who opted for elective x .
 2. Count and display the total no. of students in each elective.
 3. if count less than ~~20~~ 5, inform the course will not be floated and ask the students who have opted the course to reselect their electives from the other two. Count and display the counts again
 4. Display the name of students in each electives.

```
#include <stdio.h>
int main()
{
    int d[3], i=-1, j=-1, k=-1, e, p, x;
    char a[30][30], b[30][30], c[30][30];
    do
    {
        pointf ("enter the elective no.\n 1. DOT\n 2. JAVA\n 3. datastructure\n 4. Stop\n");
        scanf ("%d", &e);
        pointf ("enter name\t");
        if (e==1)
        {
            i++;
            scanf ("%s", a[i]);
        }
        if (e==2)
        {
            j++;
            scanf ("%s", b[j]);
        }
        if (e==3)
        {
            k++;
            scanf ("%s", c[k]);
        }
    } while (e!=4);
```

classmate
Date _____
Page _____

```

if (i<2)
{
    printf ("the below mentioned student chose
            other electives & 3 \t");
    for(p=0 ; p<=i ; p++)
    {
        printf ("%s", a[p]);
        scanf ("%d", &c);
        if (c == 2)
        {
            printf ("enter your name \t");
            j++;
            scanf ("%s", b[j]);
        }
        if (c == 3)
        {
            printf ("enter your name \t");
            k++;
            scanf ("%s", c[k]);
        }
    }
}

```

classmate
Date _____
Page _____

```

if (j<3)
{
    printf ("the below mentioned students chose any other
            elective 1 & 3 \t");
    for( p=0 ; p<=j ; p++)
    {
        printf ("%s", b[p]);
        scanf ("%d", &c);
        if (c == 1)
        {
            printf ("enter your name \t");
            i++;
            scanf ("%s", a[i]);
        }
        if (c == 3)
        {
            printf ("enter name \t");
            k++;
            scanf ("%s", c[k]);
        }
    }
}

```

if ($k < 2$)

printf ("the below students chose another elective
1 & 2\n");

for ($p=0$; $p \leq k$; $p++$)

printf ("%s", c[p]);

scanf ("%d", &e);

if ($e == 1$)

printf ("enter name");

i++;

scanf ("%s", a[i]);

if ($e == 2$)

printf ("enter name");

j++;

scanf ("%s", a[j]);

}

```

9
10 #include <stdio.h>
11 int main()
12 {
13     int d[3],i=-1,j=-1,k=-1,e,p,x;
14     char a[30][30],b[30][30],c[30][30];
15     do{
16         printf("enter the elective number\n 1.internet of things\n 2.advanced java\n 3.advanced data structures\n 4.stop\n ");
17         scanf("%d",&e);
18         printf("enter name\t");
19         if(e==1)
20         {
21             i++;
22             scanf("%s",a[i]);
23         }
24         if(e==2)
25         {
26             j++;
27             scanf("%s",b[j]);
28         }
29         if(e==3)
30         {
31             k++;
32             scanf("%s",c[k]);
33         }
34     }while(e!=4);
35
36     if(i<2)
37     {
38         printf("the below mentioned students chose any other elective 2 or 3\t");
39         for(p=0;p<i;p++)
40         {
41             printf("%s",a[p]);
42             scanf("%d",&e);
43             if(e==2)
44             {
45                 printf("enter your name\t");
46                 j++;
47                 scanf("%s",b[j]);
48             }
49             if(e==3)
50             {
51                 printf("enter your name\t");
52                 k++;
53                 scanf("%s",c[k]);
54             }
55         }
56     }
57     if(j<2)
58     {
59         printf("the below mentioned students chose any other elective 1 or 3\t");
60         for(p=0;p<j;p++)
61         {
62             printf("%s",b[p]);
63             scanf("%d",&e);
64             if(e==1)
65             {
66                 printf("enter your name\t");
67                 i++;
68                 scanf("%s",a[i]);
69             }
70             if(e==3)
71             {
72                 printf("enter your name\t");
73                 k++;
74                 scanf("%s",c[k]);
75             }
76         }
77     }
78 }
```

```
71         scanf("%s",a[i]);
72     }
73     if(e==3)
74     {
75         printf("enter your name\t");
76         k++;
77         scanf("%s",c[k]);
78     }
79 }
80 }
81 }
82 }
83 if(k<2)
84 {
85     printf("the below mentioned students chose any other elective 1 or 2\t");
86     for(p=0;p<k;p++)
87     {
88         printf("%s",c[p]);
89         scanf("%d",&e);
90         if(e==1)
91         {
92             printf("enter your name\t");
93             i++;
94             scanf("%s",a[i]);
95         }
96         if(e==2)
97         {
98             printf("enter your name\t");
99             j++;
100            scanf("%s",b[j]);
101        }
102    }
103 }
104 }
105 if(i>=2)
106 {
107     printf("elective 1\n");
108     printf("number of students in elective 1= %d\n",i+1);
109     for(x=0;x<=i;x++)
110     {
111         printf("%s\n",a[x]);
112     }
113 }
114 }
115 }
116 if(j>=2)
117 {
118     printf("elective 2\n");
119     printf("number of students in elective 2= %d\n",j+1);
120     for(x=0;x<=j;x++)
121     {
122         printf("%s\n",b[x]);
123     }
124 }
125 }
126 if(k>=2)
127 {
128     printf("elective 3\n");
129     printf("number of students in elective 3= %d\n",k+1);
130     for(x=0;x<=k;x++)
131     {
132         printf("%s\n",c[x]);
133     }
134 }
135 return 0;
136 }
```

```
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
1
enter name      a
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
1
enter name      s
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
2
enter name      d
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
2
enter name      f
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
2
enter name      g
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
2
enter name      j
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
3
enter name      k
enter the elective number
1.Internet of things
2.advanced java
```

```
enter name      k
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
3

enter name      l
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
3

enter name      r
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
3

enter name      y
enter the elective number
1.Internet of things
2.advanced java
3.advanced data structures
4.stop
4

enter name      the below mentioned students chose any other elective 2 or 3      a2
enter your name a
s3

enter your name s
elective 2
number of students in elective 2= 5
d
f
g
j
a

elective 3
number of students in elective 3= 5
k
l
r
y
s
```

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

Week 3

import java.util.Scanner;
public class Roots {
 public static void main (String args []) {
 double secondroot = 0, firstroot = 0;
 Scanner sc = new Scanner (System.in);
 System.out.println ("Enter the values of a,b,c");
 double a = sc.nextDouble();
 double b = sc.nextDouble();
 double c = sc.nextDouble();
 double determinant = ~~Math.sqrt~~
$$[b * b] - [4 * a * c];$$

 if (determinant > 0) {
 firstroot =
$$(-b + \sqrt{det}) / (2 * a);$$

 secondroot =
$$(-b - \sqrt{det}) / (2 * a);$$

 System.out.println ("Roots are : " + firstroot + " and " + secondroot);
 } else if (det == 0)
 System.out.println ("Roots are : " + $(-b + \sqrt{det}) / (2 * a)$);
 else if (det < 0)
 System.out.println ("Roots don't exist");
 }
}

Algorithm:

1. Input three nos a, b, c
2. $\det = \sqrt{b^2 - 4ac}$
3. if $\det > 0$ then roots = $(-b \pm \det)/2a$
4. else if $\det = 0$ then roots = $-b/2a$
5. else if $\det < 0$ then no real roots exist.
6. end.

```
C:\Administrator: Command Prompt  
yMicrosoft Windows [Version 10.0.18363.1082]  
(c) 2019 Microsoft Corporation. All rights reserved.  
C:\Users\Aishwarya V>cd C:\Program Files\Java\jdk1.8.0_261\bin  
C:\Program Files\Java\jdk1.8.0_261\bin>cd ojj  
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>set path="C:\Program Files\Java\jdk1.8.0_261\bin"  
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac quadratic.java  
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java quadratic  
enter the values  
2 4 -4  
roots are real and distinct: 0.73 and -2.73  
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

Week 3 Extra questions

1) Accept n elements in array, find sum of even, and odd indices and print.

A)

```
import java.util.Scanner;
```



```
public class evenoddsum
```



```
{
```

```
public static void main (String args[])
```



```
{
```

```
int n, i;
```

```
System.out.println ("enter the length of the array");
```

```
Scanner sc = new Scanner (System.in);
```

```
n = sc.nextInt();
```

```
int arr[] = new int [n];
```

```
System.out.println ("enter the elements of array");
```

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

```
{
```

```
arr[i] = sc.nextInt();
```

```
}
```

```
int even = 0, odd = 0;
```

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

```
arr[i] = sc.nextInt();
```

```
int even = 0, odd = 0;
```

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

```
{ if (i%2 == 0)
```

```
even += arr[i];
```

```
else odd += arr[i];
```

```
}
```

```
        system.out.println ("Even and odd sum: "+even+"
                           +odd);
```

- 2) n integers in array no. of +ve, -ve & 0s.

```
import java.util.Scanner;
```

```
public class count
```

```
public static void main (String args[])
```

```
int n,i;
```

```
System.out.println ("enter the length of the array");
```

```
Scanner sc=new Scanner (System.in);
```

```
int arr[] = new int[n];
```

```
System.out.println ("enter elements");
```

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

```
{ arr[i] = sc.nextInt(); }
```

```
int pos=0, neg=0, zero=0;
```

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

```
{ if (arr[i]==0)
    zero++; }
```

```
else if (arr[i]>0)
    pos++; }
```

```
else if (arr[i]<0)
    neg++; }
```

```

        system.out.println ("the no. of pos nos are = "+pos);
        System.out.println ("the no. of negative and zeros are = "+neg+" "+zero);
    }
}

```

3) one array for rate , another for quantity , find total bill and final , discont = 5%.

$$\begin{aligned} \text{3\%: } & \quad \text{tot} \geq 7500 \\ & \quad 44 < 10000 \end{aligned}$$

$$\begin{aligned} \text{2\%: } & \quad \text{tot} \geq 5000 \end{aligned}$$

A) import java.util.Scanner;

public class bill

{

public static void main (String args [])

{

int x, i;

System.out.println ("enter the no. of items");

Scanner sc = new Scanner (System.in);

x = sc.nextInt();

float rate [] = new float [x];

int quant [] = new int [x];

float total [] = new float [x];

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

rate [i] = sc.nextFloat();

System.out.println ("enter the quantity");

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

quant [i] = sc.nextInt();

```

for( i=0 ; i<x ; i++ )
{
    total[i] = quant[i] * rate[i];
    tot = tot + total[i];
}
if (tot >= 10000)
{
    dis = tot * 5/100;
}
else if ((tot >= 7500) && (tot < 10000))
{
    dis = tot * 3/100;
}
else if (tot >= 5000)
{
    dis = tot * 2/100;
}
fina = tot - dis;
System.out.println("the total bill and final bill is " +
    tot + " and " + fina);
}

```

4) array A \rightarrow n elements.

array B \rightarrow odd elements

array C \rightarrow even \leftarrow sum, avg, max, min of C.

A) import java.util.Scanner;

```

public class oddeven
{
    public static void main (String args[])
    {

```

```

int x, i, j=-1, k=-1, sum=0, avg;
System.out.println ("enter no. of items");
Scanner sc = new Scanner (System.in);
x = sc.nextInt();
int a[] = new int[x];
int b[] = new int[x];
int c[] = new int[x];
System.out.println ("enter the elements");
for (i=0 ; i<x ; i++)
{
    a[i] = sc.nextInt();
}
for (i=0 ; i<x ; i++)
{
    if (a[i] % 2 == 0)
    {
        j++;
        b[j] = a[i];
    }
    else
    {
        k++;
        c[k] = a[i];
    }
}
for (i=0 ; i<k ; i++)
{
    sum = sum + c[i];
}
avg = sum/k;

```

```
int small = c[0];
```

```
int big = c[0];
```

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

```
{
```

```
if (c[i] > big)
```

```
big = c[i];
```

```
else if (c[i] < small)
```

```
small = c[i];
```

```
}
```

```
System.out.println("sum = " + sum + "avg = " + avg + "biggest = "
+ big + "smallest = " + small);
```

```
}
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac evenoddsum.java  
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java evenoddsum  
enter the length of the array  
4  
enter the elements of the array  
1 2 1 2  
Even index positions sum: 2  
Odd index positions sum: 4
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac count.java
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java count
enter the length of the array
```

```
5
```

```
enter the elements of the array
```

```
1 2 -5 -4 0
```

```
the number of positive numbers are=2
```

```
the number of negative numbers are=2
```

```
the number of zero numbers are=1
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac bill.java
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java bill
```

```
enter the no. of items
```

```
2
```

```
enter the rate of each item
```

```
1000 2000
```

```
enter the quantity of each item
```

```
1 2
```

```
the total bill is 5000.00the final bill is 4900.00
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>■
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac oddeven.java
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java oddeven
```

```
enter the no. of items
```

```
5
```

```
enter the elements
```

```
1 2 3 4 5
```

```
sum is : 9
```

```
average is : 4
```

```
Largest Number is : 5
```

```
Smallest Number is : 1
```

6/10

Lab Program:

Q) Develop a Java program, class Student
members → USN, name, an array credits and
array marks. Methods to accept, display details
and method to calculate SGPA of student.

A) import java.util.Scanner();

class Student

{

String name;

String usn;

int sum = 0, n; double sgpa;

int[] credits, score;

double[] marks;

void getdata()

{

Scanner ss = new Scanner(System.in);

System.out.println("enter name, usn, no. of subjects");

name = ss.next();

usn = ss.next();

n = ss.nextInt();

credits = new int[n];

marks = new double[n];

score = new int[n];

int i;

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

{

Date _____
Page _____

and marks

```

System.out.println("enter credits for subjects " + (i+1));
credits[i] = ss.nextInt();
System.out.println("enter
marks[i] = ss.nextDouble();
if (marks[i] >= 90)
    score[i] = 10;
else if (marks[i] >= 80 && marks[i] < 90)
    score[i] = 9;
else if (marks[i] >= 70 && marks[i] < 80)
    score[i] = 8;
else if (marks[i] >= 60 && marks[i] < 70)
    score[i] = 7;
else if (marks[i] >= 50 && marks[i] < 60)
    score[i] = 6;
else if (marks[i] >= 40 && marks[i] < 50)
    score[i] = 5;
else
    score[i] = 4;
sum = sum + credits[i];
}
void calc (int[] credits, int score[], int sum)
{
    int i;
    double sum, total = 0.0;
    for (i=0; i<n; i++)
        total = total + credits[i] * score[i];
}

```

Date _____
Page _____

```

sgpa = total / sum;
}

void printdata()
{
    System.out.println("name = " + name);
    System.out.println("usn = " + usn);
    System.out.println("sgpa = " + sgpa);
}

class std
{
    public static void main (String args[])
    {
        Student s1 = new Student();
        s1.getdata();
        s1.printdata();
    }
}

```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac student.java  
  
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java std  
enter name, usn, no. of subjects  
aish 123 2  
enter credits and marks for subject1  
5 50  
enter credits and marks for subject2  
6 70  
name= aish  
usn= 123  
sgpa is 7.09  
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

1BM19CS008
Aishwarya.V
Week 4 Extra.

- 6/10 1) Java P. to create class Player, variables id, name , scores , no_matches + played with default access specifier . Include the foll:

- a) Constructors
- b) appropriate methods that calc. avg. Scores of players and displays the same.

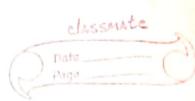
Create 2 player objects and display details who has greatest avg. score.

A) import java.util.Scanner;

```
class player
{
    int sum = 0, played;
    String name, pid;
    int[] scores;
    float avg;
```

② player()

```
{  
Scanner ss = new Scanner(System.in);  
System.out.println("Enter player name, id and  
no. of matches played by the player");  
name = ss.next();  
pid = ss.next();  
played = ss.nextInt();  
Scores = new int[played];
```



System.out.println("enter the scores");
for(int i=0 ; i< played ; i++)
{
 Scores[i] = ss.nextInt();
 Sum = Sum + scores[i];
}
void average()
{
 avg = (float) sum / played;
 System.out.println("average score = " + avg);
}
void display()
{
 System.out.println("the name id and total score
of player having greatest avg is " + name + "
" + pid + " " + sum);
}

class play

```
{  
public static void main(String args[])  
{  
    player p1 = new player();  
    p1.average();  
}
```

have done methods to return, can want to try in private



```
player p2 = new player();
p2.average();
if (p1.avg > p2.avg)
    p1.display();
if (p2.avg > p1.avg)
    p2.display();
```

2) Class ~~student~~ numbers numbers - bookid, booktitle, no. of pages, year of publish, author, publisher and price. Create 3 objects of book class.

Include methods in Book class that do the fol.

- Accepting the book details.
- Displaying the book details
- Accept the author name and display the book details
- Display booktitle of most expensive book.
- Court of books in 2020.
- Display details of book with least no. of pages.

void display()

```
System.out.println ("bookid=" + bookid + "title=" + title
                    + "year=" + year + "no. of pages=" + pages + "price=" + price
                    + "author=" + author + "publisher=" + publisher);
```

void authormame (String y)

if (author == y)

display();

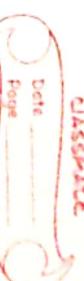
}

int bookid, year, pages, price;

String author, booktitle, publisher;

~~void read()~~

```
A) import java.util.Scanner;
class book
{
    int bookid, year, pages, price;
    String author, booktitle, publisher;
```



```

void printExpense()
{
    System.out.println("most expensive " + bookInfo);
}

int count()
{
    if (year == 2020)
        return 1;
    else return 0;
}

int printPage()
{
    if (b3.page() < b2.page())
        b2.display();
    else if (b2.page() < b1.page())
        b3.display();
    else if (b2.page() < b1.page())
        b1.display();
}

```

~~if (b1.page() < b2.page() && b1.page() < b3.page())
 b2.display();
 if (b2.page() < b1.page() && b2.page() < b3.page())
 b2.display();
 if (b3.page() < b2.page() && b2.page() < b1.page())
 b3.display();~~

```

    } else
        System.out.println("no. of books in 2020 = " + (b1.count() + b2.count() + b3.count()));
}

```

```

class books
{
}
```

```

public static void main (String args[])
{
}
```

```

book b1 = new book();
book b2 = new book();
book b3 = new book();
}
```

~~class~~

```

Scanner ss = new Scanner (System.in);
System.out.println ("enter author");
String x = ss.nextLine();
b1.authorsName(x);
b2.authorsName(x);
b3.authorsName(x);
}
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac player.java

C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java play
enter the name, id and number of matches played by the player
asd 1 3
enter the scores
200 150 250
average score is= 200.0
enter the name, id and number of matches played by the player
zx 2 4
enter the scores
200 190 200
160
average score is= 187.5
the name id and total score of the player having greatest average score is asd 1 600
```

```
riya@C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java books
enter the bookid, booktitle, year , no of pages, price, author, publisher of the book
1 qwerty 2020 200 5000 jay shetty
enter the bookid, booktitle, year , no of pages, price, author, publisher of the book
2 asdfgh 2019 300 1500 radhika penguin
enter the bookid, booktitle, year , no of pages, price, author, publisher of the book
3 zxcvb 2020 400 4000 yash raj
enter the author name
jay
the most expensive book is qwerty
number of books published in 2020 are 2
bookid= 1booktitle= qwertyyear= 2020no of pages= 200 price= 5000author= jay publisher of the book= shetty
```

1BM19CS008
Aishwarya V

Week 5

BookString.java

13/10 1) Create Class Book, members → name, author, pages, price. Constructor to set values, methods to get values. Include `toString()` to return all details of n no. of objects.

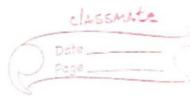
A) import java.util.Scanner;

Class book

```
private String name, author;
private double price;
private int pages;

book()
{
    name = "abcd";
    author = "xyz";
    price = 0.0;
    pages = 0;
}

void get()
{
    Scanner sc = new Scanner(System.in);
    System.out.println("enter name, author, price, pages");
    name = sc.next();
    author = sc.next();
    price = sc.nextDouble();
    pages = sc.nextInt();
}
```



public String toString()
{
 return ("book ; " + name + " author : " + author + " price : " + price + " pages : " + pages);
}

class books
{
 public static void main(String args[])
 {
 Scanner xx = new Scanner(System.in)
 System.out.println("Enter no. of Books");
 int n = xx.nextInt();
 book b[] = new book[n];
 for(int i=0; i < n; i++)
 {
 System.out.println("Book no. " + (i+1));
 b[i] = new book();
 b[i].get();
 }
 System.out.println("Book details : ");
 for(int i=0; i < n; i++)
 {
 System.out.println("book no." + (i+1));
 System.out.print(b[i]);
 }
 }
}

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java books
enter the no. of books
2
book no. 1
enter the name, auhor, price, number of pages of the book
as as 12 12
book no. 2
enter the name, auhor, price, number of pages of the book
sd sd 23 23
book details:
book no. 1
book: as author: as price: 12.0 pages: 12
book no. 2
book: sd author: sd price: 23.0 pages: 23
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

1BM19CS008
Aishwarya V

Week 5

BookString.java

13/10 1) Create Class Book, members → name, author, pages, price. Constructor to set values, methods to get values. Include `toString()` to return all details of n no. of objects.

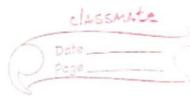
A) import java.util.Scanner;

Class book

```
private String name, author;
private double price;
private int pages;

book()
{
    name = "abcd";
    author = "xyz";
    price = 0.0;
    pages = 0;
}

void get()
{
    Scanner sc = new Scanner(System.in);
    System.out.println("enter name, author, price, pages");
    name = sc.next();
    author = sc.next();
    price = sc.nextDouble();
    pages = sc.nextInt();
}
```



public String toString()
{
 return ("book ; " + name + " author : " + author + " price : " + price + " pages : " + pages);
}

class books
{
 public static void main(String args[])
 {
 Scanner xx = new Scanner(System.in)
 System.out.println("Enter no. of Books");
 int n = xx.nextInt();
 book b[] = new book[n];
 for(int i=0; i<n; i++)
 {
 System.out.println("Book no. " + (i+1));
 b[i] = new book();
 b[i].get();
 }
 System.out.println("Book details : ");
 for(int i=0; i<n; i++)
 {
 System.out.println("book no." + (i+1));
 System.out.print(b[i]);
 }
 }
}

```
a simple program on basic class.
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac employee.java
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java employ
enter the employee name ,id ,hours ,basic , HRA(%), DA(%), IT(%)
aish 123 270 3000 2 3 4
the calculated gross is Rs.3030.0
the updated gross is Rs.30030.0
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac age.java
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java ages
```

```
age of abc
```

```
enter the years and months
```

```
18 4
```

```
age of xyz
```

```
enter the years and months
```

```
18 6
```

```
xyz is elder
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java transpose  
enter the number of elements m and n
```

```
3 3
```

```
enter the elements
```

```
1 2 3 4 5 6 7 8 9
```

```
transpose matrix is
```

1	4	7
2	5	8
3	6	9

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java countnegposzero
enter the number of elements
4
enter the elements
-1 -2 0 8
number of positive= 1 negetive= 2zeros= 1

C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac doublecmd.java
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java doublecmd 2 3 5 6 7
```

```
enter the number of elements
```

```
5
```

```
2.0
```

```
3.0
```

```
5.0
```

```
6.0
```

```
7.0
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\oji>
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac circledemo.java
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java circledemo
```

```
enter the radius
```

```
23
```

```
radius= 23.0
```

```
area= 1661.06
```

```
perimeter= 144.44
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>■
```

```
tp C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac actors.java
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java actors
enter the number of actors
2
enter the name,id,movies done and years of experience of actor 1
asd 1 100 30
enter the name,id,movies done and years of experience of actor 2
qwe 2 150 25
the actor having highest average= qwe

C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

1) Class Student \rightarrow variables \rightarrow usn, name, sem.

derive Class Test from student \rightarrow array of cie marks of each course and corresponding Credits in another array.

Exam from test \rightarrow array of see marks

Class Result \rightarrow to calc grade for each course and SGPA.

N student objects and display details.

A) class Student

{

String usn, name, sem;

void readname()

{

Scanner ss = new Scanner (System.in);

usn = ss.next();

name = ss.next();

sem = ss.next();

}

class test extends student

{

int n, i;

double cie[];

int credits[];

void readmarks()

{

System.out.println ("enter no. of courses");

Scanner ss = new Scanner (System.in);

n = ss.nextInt();

```

cie = new double[n];
credits = new int[n];
System.out.println("Enter cie and credits");
for(i=0; i<n; i++)
{
    cie[i] = ss.nextDouble();
    credits[i] = ss.nextInt();
}
}

class exam extends test
{
    double sec[][];
    void readsec()
    {
        System.out.println("Enter sec marks");
        Scanner ss = new Scanner(System.in);
        Sec = new double[n];
        for(i=0; i<n; i++)
            sec[i] = ss.nextDouble();
    }
}

```

Page

```

class result extends exam
{
    float result;
    int score[] = new int[n+1];
    void calc()
    {
        float sum=0, sumc=0;
        for(i=0; i<n; i++)
        {
            double z = cie[i] + (sec[i]/2);
            if(z >= 90)
                score[i] = 10;
            else if(z >= 80)
                score[i] = 9;
            :
            sum += score[i] * credits[i];
            sumc += credits[i];
        }
        result = sum/sumc;
    }
    void display()
    {
        System.out.println("Name = " + name + " Usrn = " + usrn + " Sem = " + sem + " Sgpa = " + result);
    }
}

```

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```

class Sgpa
{
    public static void main(String args[])
    {
        System.out.println("Enter no. of students");
        Scanner ss = new Scanner(System.in);
        int n = ss.nextInt();
        Result res[] = new Result[n];
        float avg;
        for (int i = 0; i < n; i++)
        {
            res[i] = new Result();
            System.out.print("Enter name name " + i + ":");
            res[i].readName();
            res[i].readMarks();
            res[i].readAvg();
            res[i].calc();
            System.out.println("The details are:");
            res[i].display();
        }
    }
}

```

2) Class Player - name, matches-played, avg
 ↓
 derive 2
 Batsman - runs-scored
 Bowler - runs-given
 m batsman, n bowler objects. Calc and display avg
 runs scored by each Batsman and avg given by bowler.
 abstract class Player

{
 String name;
 int matches-played;
 double avg;
 abstract void cal-average (String s, int m, int r);
}

Class Batsman extends Player
 {
 int runs-scored;
 void cal-average (String s, int m, int r);
 {
 name = s;
 matches-played = m;
 runs-scored = r;
 avg = runs-scored / matches-played;
 System.out.println("Avg = " + avg);
}

class Bowler extends Player

```

{ int runs_given;
void cal_average (String s, int m, int r)
{
    name = s;
    matches_played = m;
    runs_given = r;
    avg = runs_given / matches_played;
    System.out.println("Avg "+avg);
}
}
```

class Cricket

```

{ public static void main (String args[])
{
    Scanner sc = new Scanner (System.in);
    System.out.println("Enter no. of bowlers");
    int bo = sc.nextInt();
    System.out.println("no. of batsmen");
    int ba = sc.nextInt();
    Bowler b1[] = new Bowler [bo];
    Batsmen b2[] = new Batsmen [ba];
    System.out.println("The bowlers are");
    for (i=0; i<bo; i++)
    {
        b1[i] = new Bowler();
        System.out.println("Enter name, matches, runs given");
        String bname = sc.nextLine();
        int bmatch = sc.nextInt();
        int bruns = sc.nextInt();
        b1[i].cal_average (bname, bmatch, bruns);
    }
}
```

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System.out.println ("The batsmen are");
for (i=0; i<ba; i++)
{
 b2[i] = new Batsmen();
 System.out.println ("Enter the name ", bname, matches, runs scored");
 int bname = sc.nextLine();
 int bmatch = sc.nextInt();
 int bruns = sc.nextInt();
 b2[i].cal_average (bname, bmatch, bruns);
}

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java cricket
```

```
Enter the number of bowlers
```

```
1
```

```
1 Enter the number of batsmen
```

```
1
```

```
1 The bowlers are
```

```
1 Enter the name of the bowler 1
```

```
asd
```

```
1 Enter the number of matches played
```

```
10
```

```
1 Enter the number of runs given
```

```
100
```

```
Average runs given is 10.0
```

```
The batsmen are
```

```
Enter the name of the batsman 1
```

```
qwe
```

```
Enter the number of matches played
```

```
13
```

```
Enter the number of runs scored
```

```
230
```

```
Average runs scored is 17.0
```

```
1
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>
```

—
enter the number of students

1

enter the usn name and semester of the student 1

1 2 3

enter the number of courses

1

enter the cie marks and corresponding credits

10 5

enter the see marks

20

the details of student 1 are

name= 2usn= 1semester= 3sgpa= 4.0

Aishwarya V
1BM19 CS008

Week 8

- Q) Class Bank → two kinds of accs -
Savings - provides C.I., withdrawal facilities, no checkbook.
Current - provides checkbook, no interest.
Should maintain minimum balance,
if not service charge imposed.

Class Account - customer name, accno., type of acc.

derive → class Curr-acc

→ class Sav-acc

methods - accept deposit from user and update balance.

- display balance.

- Compute and deposit interest

- Permit withdrawal and update balance.

- Check min balance, impose penalty, update balance.

A) class Account

$$CI = P \left(1 + \frac{R}{100} \right)^t \text{ annually}$$

String name, accno, type;

float bal;

int option;

float deposit, rate, years, withdrawal=0;

; Account()

Scanner sc = new Scanner(System.in);

System.out.println("Enter the name, acc no, type, balance");

name = sc.nextInt();

accno = sc.nextInt();

type = sc.nextInt();

import java.lang.Math;

Math.pow(a, b);

a

bal = sc.nextFloat();

}

void display()

{ System.out.println("The name = " + name + " acc.no = " + accno +
" type of bank account = " + type + " balance is " + bal);

}

class sav-acct extends account

{

float ci = 0;

boolean checkbookFacility = false;

void savActivity()

{

Scanner sc = new Scanner(System.in);

do {

System.out.println("choose 1. deposit money
2. withdraw 3. check balance 4. checkbook 5. exit");

Option = sc.nextInt();

switch (option)

case 1 : System.out.println("Enter the deposit amount, rate of interest
no. of years");

deposit = sc.nextFloat();

rate = sc.nextFloat();

years = sc.nextFloat();

ci = deposit * (float) Math.pow((1 + (rate / 100)), years));

bal = bal + ci;

break;

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```

Case 2 : { System.out.println ("the enter amount to withdraw");
    withdrawal = sc.nextFloat();
    bal = bal - withdrawal;
    } break;

Case3 : { System.out.println ("the remaining balance is =Rs "+bal);
    break;

Case 4: { if (checkbookfacility)
    System.out.println ("Checkbook provided in savings account");
    else System.out.println (" " " not provided ");
    } break;

Case 5: break;

Default: System.out.println ("invalid option");
} while (option!=5);
}

class curr_acct extends account
{
    boolean checkbookfacility = true;
    void curr_activity()
    {
        Scanner sc = new Scanner (System.in);
        System.out.println ("Enter the minimum balance and penalty");
        float min = sc.nextFloat();
        float penalty = sc.nextFloat();
        do { System.out.println ("choose 1. deposit 2. withdraw
            3. checkbalance 4. checkbook 5. exit ");
            option = sc.nextInt();
            switch (option):
                Case 1 : { System.out.println ("enter the deposit");
                    deposit = sc.nextFloat();
                    bal = bal + deposit;
                    } break;
                Case 2 : { System.out.println ("enter the amt you want to withdraw");
                    withdrawal = sc.nextFloat();
                    bal = bal - withdrawal;
                    } break;
                Case 3 : { if (bal < min)
                    bal -= penalty ;
                    System.out.println ("penalty = " +penalty );
                    System.out.println ("the remaining balance is =Rs ." +bal);
                    } break;
                Case 4: { if (checkbookfacility)
                    System.out.println ("check book provided ");
                    else System.out.println ("checkbook not provided ");
                    } break;
                Case 5: break;
                default: System.out.println ("invalid option");
            } while (option!=5);
    }
}

```

class bank {
 public static void main(String args[]){
 Scanner sc = new Scanner(System.in);
 System.out.println("Enter the type 1. savings 2. current");
 int type = sc.nextInt();
 if (type == 1){
 Sav acct s = new Sav_acct();
 s.sav_activity();
 }
 else if (type == 2){
 Curr_acct c = new Curr_acct();
 c.curr_activity();
 }
 }

4.3.2) Abstract Class Shape → 2 integers and empty method printArea();
 3 classes extend Shape → rectangle, triangle and Circle.
 Each contain only method printArea(), that prints the area
 of the shape.

a). import java.util.Scanner;
 abstract class Shape
 {
 int a, b;
 abstract void printArea();

class rectangle extends shape
 {
 void printArea(){
 Scanner sc = new Scanner(System.in);
 System.out.println("Enter the sides of rectangle");
 a = sc.nextInt();
 b = sc.nextInt();
 System.out.println("The area of rectangle = " + (a * b));

class triangle extends shape
 {
 void printArea(){
 Scanner sc = new Scanner(System.in);
 System.out.println("Enter radius of circle");
 a = sc.nextInt();
 b = sc.nextInt();
 System.out.println("The area = " + ((3.14 * a * a) / 2));

class circle extends shape
 {
 void printArea(){
 Scanner sc = new Scanner(System.in);
 System.out.println("Enter Radius");
 a = sc.nextInt();
 System.out.println("area = " + (3.14 * a * a));

{ Class Shapes

{ public static void main (String args[])

{ rectangle r = new rectangle();

r. printarea();

triangle t = new triangle();

t. printarea();

circle c = new circle();

c. printarea();

}

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java bank
```

```
Enter the type of account 1.savings 2.current
```

```
1
```

```
Enter the name , account number, type of bank account, balance
```

```
aishwarya 1234567 savings 30000
```

```
choose option for your savings account :1.deposit money (with compound interest) 2.withdraw money 3.check balance 4.checkbook 5.exit
```

```
1
```

```
enter the deposit amount, rate of interest ,number of years
```

```
20000 30 4
```

```
choose option for your savings account :1.deposit money (with compound interest) 2.withdraw money 3.check balance 4.checkbook 5.exit
```

```
3
```

```
the remaining balance is= Rs. 87121.99
```

```
choose option for your savings account :1.deposit money (with compound interest) 2.withdraw money 3.check balance 4.checkbook 5.exit
```

```
2
```

```
enter the amount you want to withdraw
```

```
2000
```

```
choose option for your savings account :1.deposit money (with compound interest) 2.withdraw money 3.check balance 4.checkbook 5.exit
```

```
3
```

```
the remaining balance is= Rs. 85121.99
```

```
choose option for your savings account :1.deposit money (with compound interest) 2.withdraw money 3.check balance 4.checkbook 5.exit
```

```
4
```

```
check book not provided in savings account
```

```
C:\Program Files\Java\jdk1.8.0_261\bin\ojj>javac shapes.java

C:\Program Files\Java\jdk1.8.0_261\bin\ojj>java shapes
Enter the height and base of the triangle
20 30
The area of the triangle= 300
Enter the sides of the rectangle
23 23
The area of the rectangle= 529
Enter the radius of the circle
34
The area of the circle= 3629.84
```

```
Enter your option 1.teaching faculty 2.non_teaching faculty 3.ug student 4.pg student 5.exit
1
Enter the name
nandini
Enter the years of experience of the employee
5
Enter the subject of the teaching faculty
ooj
details of the teaching faculty name=nandiniexperience=5subject=ooj
invalid
Enter your option 1.teaching faculty 2.non_teaching faculty 3.ug student 4.pg student 5.exit
3
Enter the name
aishwarya
Enter the age of experience of the student
19
Enter the subject of the ug student
computer science
details of the ug student name=aishwaryaage=19course=computer
invalid
Enter your option 1.teaching faculty 2.non_teaching faculty 3.ug student 4.pg student 5.exit
```

```
C:\Program Files\Java\jdk1.8.0_261\bin>javac solids.java
```

```
C:\Program Files\Java\jdk1.8.0_261\bin>java solids
```

```
Enter the radius and height of the cylinder
```

```
10 20
```

```
The surface area of the cylinder= 1884.000000000002
```

```
The surface area of the cylinder= 6280.0
```

```
Enter the radius and height of the cone
```

```
30 40
```

```
The surface area of the cone= 7536.0
```

```
The surface area of the cone= 37680.0
```

```
Enter the radius of the sphere
```

```
35
```

```
The surface area of the sphere= 15386.0
```

```
The surface area of the sphere= 179503.3333333334
```