Flow Control - Medium Level Questions

(1)
```
public class Tracing Q1 {
    public static void main(String[] args) {
        int x = 5, y = 2;
        for(int i = 1; i <= 3; i++) {
            if(x % y == 1) {
                x += i;
                System.out.print(x + " ");
            } else {
                x -= i;
                System.out.println(x + " ");
            }
            y++;
        }
    }
}
```

output :-

6 4

1

i	x	y
1	5	2
2	6	3
3	4	4
	1	5

(2)
```
public class Tracing Q2 {
    psvm(String[] args) {
        int a = 10;
        while(a > 0) {
            if(a % 3 == 0) {
                a /= 2;
                if(a < 3) {
                    break;
```

```
        S.o.p(a + " ");
    } else {
        a--;
        continue;
    }
}
S.o.p("End");
}
}
```

a
10
9
4
3
1

output :—

1 1

End

③

```
public class Tracing Q3 {
    pub svm(String [] args) {
        int sum = 0;
        for(int i = 1; i <= 4; i++) {
            for(int j = 1; j <= 3; j++) {
                if(i + j < 4) {
                    continue;
                }
                if(i * j % 2 == 0) {
                    sum += i + j;
                }
                else {
                    sum -= i - j;
                }
            }
        }
        S.o.p(sum);
    }
}
```

i	j	sum
1	1	0
	2	-4
	3	
2	1	
	2	0
	3	-5
3	1	-9
	2	-4
	3	-10
4	1	-15
	2	-9
	3	-16

output :—

④ public class Tracing Q4 {
    psvm(String[] args){
        int n=15;
        do{
            if(n%5==0){
                n/=5;
                S.o.p(n+" ");
            }else if(n%3==0){
                n-=3;
                S.o.p(n+" ");
            }else{
                n--;
            }
        }while(n>1);
    }
}

output:—
3 0

⑤ public class Tracing Q5{
    psvm(String[] args){
        int x=8, count=0;
        for(int i=2;i<x;i++){
            if(x%i==0){
                count++;
                if(count==2){
                    S.o.println("Multiple");
                    break;
                }
                S.o.print(i+" ");
            }
        }
        S.o.println(count);
    }
}

i	count
2	1
3	
4	2

output:—
2 Multiple 2

(6)
```
public class Tracking9c {
    psvm(String[] args){
        int a=3, b=-1;
        while(a<=6){
            if(a%2==1){
                for(int k=1; k<=2; k++){
                    if(b<8){
                        continue;
                    }
                    S.o.print(a+b*k)+" ");
                }
            }
            a++;
            b--;
        }
    }
}
```

a	b	k
~~3~~	~~-1~~	~~1~~
~~4~~	~~-2~~	~~2~~
~~5~~	~~-3~~	~~1~~
~~6~~	~~-4~~	~~2~~
7	-5	3

output:-
~~Nothing~~
10 20 10 15

(7)
```
public class Tracing9f {
    psvm(String[] args){
        int result=0;
        for(int i=1; i<=5; i++){
            if(i==3){
                continue;
            }
            int temp=i;
            while(temp>0){
                if(temp%2==0){
                    result+=temp;
                    break;
                }else{
                    temp--;
                }
            }
        }
        S.o.p(result);
    }
}
```

temp	result	i
~~1~~	~~0~~	~~1~~
~~0~~	~~2~~	~~2~~
~~2~~	~~6~~	~~3~~
~~1~~		~~4~~
~~5~~		~~5~~
4		6

output:-
02~~8~~66

(8)
```
public class Tracing Q8{
    psvm(String[] args){
        int x=12, y=0;
        do{
            if(x%4==0){
                y+=x/4;
                x-=4;
            }else if(x%3==0){
                y+=x/3;
                x-=3;
            }else{
                x--;
            }
            if(y>7){
                break;
            }
        }while(x>0);
        s.o.print(x+" "+y);
    }
}
```

Output :—

0 6

x	y	y = y + x/4
12	0	0+3
8	3	3+2
4	5	5+1
0	6	

(9)
```
public class Tracing09 {
psvm(String[] args){
    int sum = 0;
    for (int i = 0; i < 4; i++){
        for (int j = 0; j < 3; j++){
            if ((i+j) % 2 == 0){
                if (i > j){
                    sum += i * j;
                } else {
                    continue;
                }
            } else {
                sum += i + j;
            }
            if (sum > 15){
                break;
            }
        }
        if (sum > 15){
            break;
        }
    }
    System.out.print (sum);
}
}
```

Output :—

19

sum	i	j
0	0	0 1 2
1	1	0 1 2
2	2	0 1 2
5	3	0 1 2
8		
11		
14		

(10)
```
public class Tracing@10 {
    psvm(String [] args){
        int a=20, b=3, count=0;
        while (a>=10){
            if(a%b==2){
                count++;
                s.o.print(count + " ");
                if(count==3){
                    break;
                }
            }
            a-=b;
            if(a==14){
                b++;
                continue;
            }
        }
        s.o.print("Final");
    }
}
```

Output:—

1 2 3 Final

a	b	count
~~20~~	~~8~~	~~0~~
~~17~~	4	~~1~~
14		~~2~~
		3

(11)

```
public class Tracing {
    psvm(String[] args){
        int x=18, output=0;
        for(int i=2; i<=5; i++){
            if(x%i==0){
                output+=x/i;
                x-=i;
                if(output>20){
                    S.o.print("Break");
                    break;
                }
                S.o.print(output+" ");
            }else{
                continue;
            }
        }
        S.o.print(x);
    }
}
```

output = output + x/i

x	output	i
~~18~~	~~0~~	~~2~~
~~16~~	~~9~~	~~3~~
12	13	~~4~~
		~~5~~
		6

Output:-

9 13 12

(12)
```
public class Tracing Q12 {
    public psvm(String [] args) {
        int a=7, b=1;
        while (a>3) {
            b*=2;
            if (b>8) {
                for(int k=1; k<=2; k++) {
                    if (a%k==0) {
                        s.o.println((a-k)+"
                    }
                }
                break;
            }
            a--;
            s.o.print(b+" ");
        }
    }
}
```

output:-

2 4 8 3 2

a	b	K
~~7~~	~~1~~	~~1~~
~~6~~	~~2~~	~~2~~
~~5~~	~~4~~	3
4	~~8~~	
	16	

(13)
```
public class Tracking Q13{
psvm(String[] args){
    int sum=0; product=1;
    do{
        for(int j=1; j<=3; j++){
            if(product%2==0){
                sum+=j;
            }else{
                sum+=j*2;
            }
            if(sum>=12){
                break;
            }
        }
        product++;
    }while(product<=3 && sum<15);
    S.O.println(sum+" "+product);
}
}
```

Output:—

14 4

sum	product	j
~~0~~	~~1~~	~~1~~
~~2~~	~~2~~	~~2~~
~~4~~	~~3~~	~~3~~
~~10~~	4	4
~~12~~		~~1~~
14		1

(14)
```
public class Tracing011 {
    psvm(String[] args){
        int n = 25, Count = 0;
        while (n>1){
            if (n%5 == 0){
                n /= 5;
                Count++;
            } else if (n%2 == 0){
                n /= 2;
                Count++;
            } else {
                n -= 3;
            }
            if (Count == 3){
                S.o.print("Stop");
                break;
            }
        }
        S.o.print(n + " " + Count);
    }
}
```

n	Count
~~25~~	~~0~~
~~5~~	~~1~~
1	2

Output :—

1 2

(15)

```
public class Tracing15 {
    psvm(String[] args){
        int result = 0;
        for(int i = 0; i<5; i++){
            if(i==0 || i==4){
                continue;
            }
            for(int j=2; j>=0; j--){
                if((i+j)%3 == 0){
                    result += i*j;
                    if(result>8){
                        S.o.print("Exit");
                        break;
                    }
                } else {
                    result += i+j;
                }
                S.o.print(result+" ");
            }
            if(result>8){
                break;
            }
        }
    }
}
```

i	j	result
0	2	0
X	1	~~2~~
2	0	4
	-1	5
	~~-2~~	~~9~~
	1	11

output :-

2 4 5 9 Exit

(16)
```
public class Tracking016{
    psvm(String[] args){
        int x=16, y=2, steps=0;
        do{
            steps++;
            if(x>y*5){
                x-=y*2;
                S.o.print(x+" ");
            }else if(x==y*4){
                x/=2;
                y++;
                S.o.print("Half ");
            }else{
                x-=y;
            }
            if(steps==4){
                break;
            }
        }while(x>0);
        S.o.print(steps);
    }
}
```

Output :-

12 8 Half 4

x	y	steps
~~16~~	~~2~~	~~0~~
~~12~~	3	~~1~~
~~8~~		~~2~~
~~4~~		~~3~~
1		4

(1:1)

```
public class Tracking01:1 {
    psvm (String[] args) {
        int total = 0;
        for (int i = 1; i <= 4; i++) {
            int temp = i;
            while (temp <= 6) {
                if (temp % i == 0 && temp != i) {
                    total += temp;
                    S.o.p (temp + " ");
                }
                temp += 2;
                if (total > 15) {
                    break;
                }
            }
            S.o.print ("Total");  if (total > 15) {
                                      break;
        }
        System.out.println("Total");}
    }
}
```

total	i	temp
0	1	1
	2	2
		4
		6
		8

Output:-

3 5 4 6 Total

total	i	temp
0	1	1
3	2	3
8		5
8		7
12		2
18		4
		6
		8

(18)
```
public class Tracking18{
    psvm(String[] args){
        int a=6, b=1, counter=3;
        while(a>=5){
            counter++;
            if(a%3==0){
                b+=a/3;
                a-=3;
                if(b>7){
                    S.o.print("Max");
                    continue;
                }
                S.o.print(b+" ");
            }else{
                a--;
            }
            if(counter==5){
                break;
            }
        }
        S.o.print(counter);
    }
}
```

a	b	Counter
~~6~~	~~1~~	~~3~~
~~3~~	~~1~~	~~4~~
~~0~~	~~7~~	~~5~~
3	6	2

Output:-

4 6 2

(19)
```
public Class Tracking019 {
    psvm(String[] args){
        int value = 0;
        for(int i=2; i<=5; i++){
            for(int j=1; j<i; j++){
                if(i%j==0){
                    value += i+j;
                    if(value%4==0){
                        System.out.print("Div4");
                        Continue;
                    }
                }else{
                    value += i-j;
                }
                System.out.print(value+" ");
            }
        }
    }
}
```

8+3-2
9
3+1-3

Output:—

~~4~~ ~~Div4~~

0 3 4 9 15 16 22
25 27 28

value	i	j
~~0~~ 0	~~2~~	~~1~~
~~3~~ 3	~~3~~	2
~~4~~ 4	~~4~~	~~1~~
~~9~~ 9	5	~~2~~
~~15~~ 15		~~3~~
~~16~~ 16		~~1~~
~~22~~ 22		~~2~~
~~25~~ 25		~~3~~
~~27~~ 27		4
28		

(20)

```
public class Tracking021 {
    psvm(String[] args) {
        int x = 30, divisor = 6, result = 0;
        do {
            if (x % divisor == 0) {
                result += x / divisor;
                x -= divisor;
                S.o.print(result + " ");
                if (result >= 10) {
                    S.o.print("Done");
                    break;
                }
            } else {
                divisor--;
                if (divisor == 2) {
                    x /= 2;
                    continue;
                }
            }
        } while (x > 5 && divisor > 0);
        System.out.print(x);
    }
}
```

x	divisor	result
~~30~~	6	~~0~~
~~24~~		~~5~~
~~18~~		~~9~~
12		12

Output:—

5 9 12 Done 12