1. What is the effect of the absence of break in a switch…case construct?

If you don't have the 'break' keyword in after your case, then the program will continue to run through the different cases.

2. What is the difference between while and do…while? Explain with the help of an example.

While loop will loop through your statements in your while loops as long as the conditions for your while loop meet the criteria.
A do while loop will only do what you tell it in the statements, and then the while loop will check your conditions meet for the while loop to execute your while loop statements—not.

3. Differentiate between syntax errors and runtime errors.

Syntax error are errors happen when you enter code that your compiler doesn't understand. Those are the more obvious errors.
Runtime errors are harder to spot as your code could still run. Runtime errors include things like logic errors and mis spelling in your print statement.

4. Differentiate between unary, binary and ternary operators. Give examples.

Urnary Operator takes assigns values, and operates on one operand.
(int a = 5;)
Binary operator operates on two operands, and is used to compare values.
(boolean a == true;)
Ternary operators in java is a shortcut for if/else statements. You assign the result to a variable and can display that result.

```
msg = (num == 4) ? "Correct!" : "Incorrect!";
alert(msg);
```

5. Convert the following as directed:

a. **// switch to if else**

2

```
switch (ch)
{
  case 1: System.out.println(”Yes”);
          break;
  case 2: System.out.println(”No”);
              break;
  default: System.out.println(”Wrong choice”);
}
```

b. **// do…while to while**

```
char ans;
int num;
while (ans == ‘Y’)
{
  System.out.println(”Enter a number”);
  num=input.nextInt();
  System.out.println(”The square of the number is : “num*num<<endl;
  System.out.println(”Do you want to continue?”;
  ans=input.nextChar();
};
```

6. What is the output if the following program segments :

```
int x=9, y=5;
int c = (float) x/y;
System.out.println(c);
```

I expected this to print out, but it doesn’t because none of the variables are declare as a float data type. I did expect this to cast the result into a floating point number, though…

7. Evaluate the following conditional expression as true or false for the give values of a, b, c and d:

((a >= b) && (b < d)) && ((c < d + 4) ll (a < c))

a) a = 6, b = 2, c = 5, d = 3

True

b) a = 3, b = 7, c = 4, d = 5

False

8. Find syntax errors : outlined in red below

```
public static void main(String[] args)
int num;
System.out.println(“Enter a number”);
num=input.nextDouble();
if (num >100)
System.out.println(num);
}
```

9. Write Java programs to find the sum of the following series (up to N terms) :

a. 1 + 3 + 5 + 7 …

```
import java.util.Scanner;
public class Array
{
        int n, sum=0;
        Scanner input = new Scanner(System.in);
        System.out.println(“How big is this array going to be?”)
        n = input.nextInt();
        int[] a = new int[n];
        System.out.println(“Enter all the elements:”);
        for(int i = 0; i<n; i++)
{
        a[i]=input.nextInt();
        sum = sum + a[i];
}
        System.out.println(“Sum:” + sum);
}}
```

b. $2^2 + 4^2 + 6^2 \ldots$

```
import java.util.Scanner;
public class Project {

	public static void main(String[] args)
	{
		// TODO Auto-generated method stub
		int n, sum=0;
		Scanner input = new Scanner(System.in);
		System.out.println("How big is the array going to be?");
		n = input.nextInt();
		int[] a = new int[n];
		System.out.println("Enter all the elements:");
		for(int i = 0; i<n; i++)
		{
			a[i]=input.nextInt();
			sum = sum + (a[i]*a[i]);
		}
		System.out.println("Sum:" + sum);
	}
}
```

c. $1^3 + 3^3 + 5^3 \ldots$

```
import java.util.Scanner;
public class Project {

	public static void main(String[] args)
	{
		// TODO Auto-generated method stub
		int n, sum=0;
		Scanner input = new Scanner(System.in);
		System.out.println("How big is the array going to be?");
		n = input.nextInt();
		int[] a = new int[n];
		System.out.println("Enter all the elements:");
		for(int i = 0; i<n; i++)
		{
			a[i]=input.nextInt();
			sum = sum + (a[i]*a[i]*a[i]);
		}
		System.out.println("Sum:" + sum);
	}
}
```

10. Write a Java program to accept a number from the user and display the following menu :

3

a. First 5 multiples
b. Squares of first 5 multiples
c. Cubes of first five multiples.
Depending on the user's choice, the appropriate action should be carried out.

```
public class multi5 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner input = new Scanner(System.in);
		int a, pick,i=1;


		System.out.println("Enter a number: ");
		a = input.nextInt();
		System.out.println("What would you like to do with these:\n"
				+ "1. First 5 multiples\n" +
				"\n" +
				"2. Squares of first 5 multiples\n" +
				"\n" +
				"3. Cubes of first five multiples.");
		pick = input.nextInt();
		switch(pick) {

		case 1:

			while(i <= 5) {

				int b= a*i;

				System.out.println(i +" : " + b);
				i++;
			}
			break;
```

```
            case 2:
                    for (i=1; i<= 5;i++) {

                            int b= a*i;
                            System.out.println(i +" : " + (b*b));
                    }break;
            case 3:
                    for (i = 1; i <= 5; i++) {

                            int b= a*i;

                            System.out.println(i +" : " + (b*b*b));
                    }
                    break;

            default:
                    System.out.println("Bad Input");
    }
```

11. _Write Java programs for the following:

7x3

a. To take the input of a number and then find and display the following:

i. sum of even digits

ii. sum of odd digits

iii. total number of even digits

iv. total number of odd digits

b. To take the input of a number and then check whether it is an Armstrong number or not, i.e. the sum of the cubes of it's digits is equal to the number itself. **For example $1^3 + 3^3 + 5^3 = 153$**

c. To take the input of a number and then find and display the reverse of a number.

d. To take the input of two numbers and then find and display their HCF (highest common factor).

e. To take the input of two numbers and then find and display their LCM (Lowest common multiple).

f. To take the input of a number **n** and then find the sum of all even numbers between 1 and **n** .

g. To take the input of a number **n** and then find the sum of all odd numbers between 1 and **n** .

12. Write Java program to find the sum of the Fibonacci series for **n** terms, where **n** is a number entered by the user.

0 + 1 + 1 + 2 + 3 + 5 + … //Fibonacci Series

```
import java.util.Scanner;
//Fibonacci series

public class Fibonacci
{
   public static void main(String[] args)
   {
     int x=0,y=1,z=1;
     Scanner input = new Scanner(System.in);

     System.out.println("Enter any number:");
     int n = input.nextInt();
     System.out.print(“0 1 1 ");

     while (x <=n){
       x = y+z;
       y=z;
       z=x;
       System.out.print(x + “  ");

     }


   }

}
```

13. Write Java programs to find the sum of the following series for **n** terms, where **n** is a number entered by the user. The program should also take the input of a number **x**. 3

$x + x^2 x^3 + x^4 + \ldots + x^n$

```
import java.util.Scanner;

public class Main
{
    public static void main(String[] args)
    {
      int x=0;
      int a;
      Scanner input = new Scanner(System.in);

      System.out.println("Enter any number: ");
      int n = input.nextInt();
      System.out.println("Enter any x value: ");
      x = input.nextInt();

                              for (int i=1; x>=i ; i++) {
                                a= n*i;

                                        System.out.print(a+" ");

                              }
    }
}
```

14. Write Java programs for displaying the following patterns for **n** rows on the screen, where **n** is a number entered by the user:

```
1
12
123
1234
```

```
4321
321
21
1
```

```
import java.util.Scanner;
class Main {
  public static void main(String[] args) {
                Scanner input = new Scanner(System.in); // Create a Scanner

                // Prompt the user to enter the number of rows
                System.out.print("Enter the number of rows: ");
                int n = input.nextInt();
                int padding = n - 1;  // Holds number of whitespace
                for (int r = 1; r <= n; r++) {
                        // Print padding
                        for (int p = 0; p < padding; p++) {
                                System.out.print("  ");
                        }

                        // Print numbers
                        for (int i = r; i > 0; i--) {
                                System.out.print(i + " ");
                        }
                        System.out.println();
                        padding--; // Decrement padding
                }
        }
}
```