1. Array

```
public class TwoDimensionArray {
   public static void main(String[] args) {
      final int ROW = 3, COLUMN = 4;
      int score[][] = new int[ROW][COLUMN];
      int data = 5;
      // Assigning values
      for (int i = 0; i < ROW; i++) {
         for (int j = 0; j < COLUMN; j++) {
            score[i][j] = data;
            data += 5;
         }
      }
      // Printing array
      System.out.println("Array");
      for (int i = 0; i < ROW; i++) {

         for (int j = 0; j < COLUMN; j++) {
            System.out.print("\t" + score[i][j]);
         }
         System.out.println();
      }
      // Printing array's transpose
      System.out.println("Transpose array");
      for (int i = 0; i < COLUMN; i++) {
         for (int j = 0; j < ROW; j++) {
            System.out.print("\t" + score[j][i]);
         }
```

```
            System.out.println();
        }
        // Find a summation and an average
        int sum = 0;
        for (int i = 0; i < COLUMN; i++) {
            for (int j = 0; j < ROW; j++) {
                sum += score[j][i];
            }
        }
        System.out.println("Array's sum = " + sum);
        System.out.println("Array's avg = " + (float)(sum) / (ROW * COLUMN));
    }
}
```

2. While

```
import java.util.Scanner;
public class ClassAverage {
        public static void main(String[] args) {
                Scanner input = new Scanner(System.in);
                System.out.println("Welcome to the grade book for");
                System.out.println("Java Programming!");

                int total;
                int gradeCounter;
                int grade;
                int average;
                total = 0;
                gradeCounter = 1;
```

```
            while (gradeCounter <= 10) {
                System.out.print("Enter grade: ");
                grade = input.nextInt();
                total = total + grade;
                gradeCounter = gradeCounter + 1;
            }
            average = total / 10;
            System.out.printf("\nTotal of all 10 grades is %d\n", total);
            System.out.printf("Class average is %d\n", average);
        }
}
```

3. try catch

```
import java.util.InputMismatchException;
import java.util.Scanner;
public class TestException1 {
   public static void main (String[] args) {
      Scanner reader = new Scanner(System.in);
      int index;
      int[] array = { 10, 20, 30, 40, 50 };
      try {
         System.out.print("Enter index: ");
         index = reader.nextInt();
         try {
            System.out.println("array[" + index + "] = " + array[index]);
         } catch (IndexOutOfBoundsException ex) {
            System.out.println("Exception occured: " + ex);
            System.out.println("You entered number exceeds the array size");
```

```
        }
      } catch (InputMismatchException ex) {
        System.out.println("Exception occurred: " + ex);
        System.out.println("You must specify an index in integer");
      }
   }
}
```

4. Switch

```
import java.util.Scanner;

public class Switch {

   public static void main(String[] args) {

      Scanner reader = new Scanner(System.in);

      System.out.print("What\'s floor do you want to go: ");

      char floor = reader.next().charAt(0);

      switch (floor) {

         case 'G' :

            System.out.println("Elevator is going to ground floor.");

            break;

         case '1' :

            System.out.println("Elevator is going to first floor.");

            break;

         case '2' :

            System.out.println("Elevator is going to second floor.");

            break;
```

```
            case '3' :
                System.out.println("Elevator is going to third floor.");
                break;
            default:
                System.out.println("Elevator don't know where to go.");
        }
    }
}
```

5. String

```
import java.util.Scanner;
public class Constant {
    public static void main(String[] args) {
        String name;
        int age;
        String sport;
        Scanner reader = new Scanner(System.in);
        Scanner reader2 = new Scanner(System.in);
        System.out.print("What's your name?: ");
        name = reader.nextLine();
        System.out.print("How old are you?: ");
        age = reader2.nextInt();
        System.out.print("What's your favorite sport?: ");
```

```
        sport = reader.nextLine();
        System.out.println("Hello " + name);
        System.out.print("You was born in " + (2017 - age));
        System.out.println(" and loves to play " + sport);
    }
}
```

6. Method

```
import java.util.Scanner;
public class MethodParameters {
    public static void main(String[] args) {
        Scanner reader = new Scanner(System.in);
        // call method
        open ();
        System.out.print("Enter music name to play: ");
        play(reader.nextLine()); // call method with 1 argument
        System.out.println("Where do you want to seek music to?");
        int min, sec;
        System.out.print("Enter minute: ");
        min = reader.nextInt();
        System.out.print("Enter second: ");
        sec = reader.nextInt();
        seekTo(sec, min); // call method with 2 arguments
```

```
    }
    // no parameter method
    public static void open () {
        System.out.println("Music player started.");
    }
    // method with one parameter
    public static void play (String name) {
        System.out.println("Playing your music \" " + name + "\"");
    }
    // method with two parameters
    public static void seekTo (int sec, int min) {
        System.out.println("Seek music to " + min + ":" + sec);
    }
}
```

7. Else-If

```
import java.util.Scanner;
public class ElseIf {
    public static void main(String[] args) {
        Scanner sn = new Scanner(System.in);
        System.out.println("\tScore Evaluation Program");
        System.out.print("Enter your score between 0 - 100: ");
```

```
        int score = sn.nextInt();
        if (score < 0 || score > 100) {
            System.out.println("You must enter a correct score, try again later.");
        } else {
            if (score >= 80) {
                System.out.println("Your score is excellent.");
                System.out.println("You grant grade S.");
            } else if (score >= 60) {
                System.out.println("Your score is good.");
                System.out.println("You grant grade A.");
            } else if (score >= 40) {
                System.out.println("Your score is fair.");
                System.out.println("You grant grade B.");
            } else {
                System.out.println("Your score is poor.");
                System.out.println("You grant grade C.");
            }
        }
    }
}
```

8. Access Modifiers

```
public class TestFruit {

   public static void main (String[] args) {

      Fruit fr = new Fruit();

      fr.name = "Grape";

      fr.flavor = "sour";

      fr.setColor("green");

      System.out.println("Fruit name: " + fr.name);

      System.out.println("Flavor: " + fr.flavor);

      System.out.println("Color: " + fr.getColor());

   }

}

class Fruit {

   public String name;

   String flavor;

   private String color;

   public String getColor () {

      return color;

   }

   public void setColor (String c) {

      color = c;

   }

}
```

9. Finally

```
import java.io.BufferedReader;
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileReader;
import java.io.IOException;
public class TestFileException {
    public static void main(String[] args) {
        File file = new File("file.txt");
        BufferedReader reader = null;
        try {
            reader = new BufferedReader(new FileReader(file));
            String text = null;
            while ((text = reader.readLine()) != null) {
                System.out.println(text);
            }
        } catch (FileNotFoundException e) {
            e.printStackTrace();
        } catch (IOException e) {
            e.printStackTrace();
        } finally {
            try {
                if (reader != null) {
```

```
                reader.close();
            }
        } catch (IOException e) {
        }
    }
}
```

10. Inheritance

```
class Artist extends Person {
    String genre;
    public Artist (String name, int age) {
        this.name = name;
        this.age = age;
    }
    public void playMusic () {
        System.out.println(name + " is playing " + genre + " music.");
    }
}
class Athlete extends Person {
    String sport;
    public Athlete (String name, int age) {
        this.name = name;
```

```
        this.age = age;
    }
    public void playSport () {
        System.out.println(name + " is playing " + sport + ".");
    }
}
```