

PURITY KASYOKA(22/02301)

SECTION A.

1.A primitive variable's information is stored as the value of that variable while reference variables holds a reference to information related to that variable.

2.Scope of a variable refers to the region of a program where the variable is accessible and can be used .

Local variable-is defined within a specific block of code such as function.

Global variable-is declared outside of any specific block or function.

3. Initialization of variables is required because the code is made more efficient since no temporary objects are created for the initialization.

4. Static are declared with the keyword 'static' and are associated with a class rather than with specific instances of the class. Instance are declared within a class but outside any method or constructor. Local are declared within a method , constructor or block of code and have a limited scope.

5. Widening casting involves the conversation of a smaller data type to the larger type size while narrowing involves converting a larger data type to a smaller size type.

6.Boolean – 1 bit -true/false -true/false

Char- 2 bit – 0 - '\0000' to 'ffff'

Byte – 1 bit -0 - - 128 to 127

Short – 2 bit – 0 - -32,768 to 32,766

Int – 4 bit – 0 - -2.147 to 2,147

Long – 8 bit - 0L - -9,223 to 9223

Float – 4 bit – 0.0f - +3.4E + 38E

Double – 8 bit – 0.0 - -1.8E + 308 to +1.8E to 308

7.Package is a namespace that organizes a set of related classes and interfaces

8. The importance of using java packages is to avoid name conflicts, and to write a better maintainable code.

Section 2.

1. import java.util.Scanner;

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

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

```
System.out.print("Enter your surname: ");
```

```
String surname = scanner.nextLine();
```

```
System.out.print("Enter your current age: ");
```

```
int age = scanner.nextInt();
```

```
int surnameLength = surname.length();
```

```
String ageType = (age % 2 == 0) ? "even" : "odd";
```

```
System.out.println("The number of characters in your surname is " + surnameLength);
```

```
System.out.println("Your current age is an " + ageType + " number");
```

```
scanner.close();
```

```
}
```

```
}
```

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

```
public class AverageMarksCalculator {
```

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

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

```
        int totalUnits = 5;
```

```
        int[] marks = new int[totalUnits];
```

```
        System.out.println("Enter the marks for each unit:");
```

```
        // Read marks for each unit
```

```

for (int i = 0; i < totalUnits; i++) {
    System.out.print("Unit " + (i + 1) + ": ");
    marks[i] = scanner.nextInt();
}

// Calculate average
double sum = 0;
for (int mark : marks) {
    sum += mark;
}
double average = sum / totalUnits;

// Display the average with two decimal places
System.out.printf("Average marks: %.2f\n", average);

scanner.close();
}
}

```

3. import java.util.Scanner;

```

public class DivisibilityTest {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter an integer: ");
        int number = scanner.nextInt();

        System.out.println("Divisibility tests for the number " + number + ":");
    }
}

```

```

if (number % 2 == 0) {
    System.out.println("The number is divisible by 2 because it is even.");
}
if (number % 3 == 0) {
    System.out.println("The number is divisible by 3 because the sum of its digits is divisible by 3.");
}
if (number % 4 == 0) {
    System.out.println("The number is divisible by 4 because the last two digits form a number
divisible by 4.");
}
if (number % 5 == 0) {
    System.out.println("The number is divisible by 5 because it ends with a 0 or

```

```

4. public class MultiplesInRange {
    public static void main(String[] args) {
        int lowerBound = 71;
        int upperBound = 150;

        System.out.println("Multiples of 2, 3, and 7 within the range " + lowerBound + " to " + upperBound
+ ":");

        for (int number = lowerBound; number <= upperBound; number++) {
            if (number % 2 == 0 || number % 3 == 0 || number % 7 == 0) {
                System.out.println(number);
            }
        }
    }
}

```

```
}
```

5.

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

```
public class BasicCalculator {
```

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

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

```
        System.out.print("Enter the first number: ");
```

```
        double num1 = scanner.nextDouble();
```

```
        System.out.print("Enter the operation (+, -, /): ");
```

```
        char operation = scanner.next().charAt(0);
```

```
        System.out.print("Enter the second number: ");
```

```
        double num2 = scanner.nextDouble();
```

```
        double result = 0;
```

```
        switch (operation) {
```

```
            case '+':
```

```
                result = num1 + num2;
```

```
                break;
```

```
            case '-':
```

```
                result = num1 - num2;
```

```
                break;
```

```
            case '/':
```

```
                if (num2 != 0) {
```

```
                    result = num1 / num2;
```

```
    } else {  
        System.out.println("Error: Division by zero is not allowed.");  
        System.exit(0);  
    }  
    break;  
default:  
    System.out.println("Error: Invalid operation.");  
    System.exit(0);  
}  
  
System.out.println("Result: " + result);  
  
scanner.close();  
}  
}
```