**Java programming**

**Section 1:**

1. Explain the differences between primitive and reference data types.

Primitive data types are predefined data types eg Boolean, byte, short

Reference data types are objects which are not defined. They have no fixed size

1. Define the scope of a variable (hint: local and global variable.

Scope of a variable is the part of the program where the variable is accessible.

Eg. Variables declared inside a method have method level scope and can’t be accessed outside the method.

1. Why is initialization of variables required

In order to improve readability

1. Differentiate between static, instance and local variables.

We use static variables for shared data across all instances of a class or for constants.

We use instance variables for attributes specific to each object of a class.

We use local variables for temporary storage within methods or blocks

1. Differentiate between widening and narrowing casting in java.

 Widening casting safely converts smaller types to larger types. Narrowing casting requires explicit conversion from larger to smaller types and can lose data.

1. the following table shows data type, its size, default value and the range. Filling in the missing values.

|  |  |  |  |
| --- | --- | --- | --- |
| **TYPE** | **SIZE (IN BYTES)** | **DEFAULT** | **RANGE** |
| boolean | 1 bit | True/fales | true, false |
| Char | 2 | ‘\0000’ | ‘\0000’ to ‘\ffff’ |
| Byte | 1 | 0 | -128 to 127 |
| Short | 2 | 0 | -215 to +215-1 |
| Int | 4 | 0 |  |
| Long | 8 | 0L | - |
| Float | 4 | 00.0f | ±1.4E-45 to ±3.4E+38 |
| Double | 8 | 0.0 | -1.8E+308 to +1.8E+308 |

1. Define class as used in OOP

 a class is a blueprint for creating objects, providing initial values for state and implementations of behavior.

1. Explain the importance of classes in Java programming.

Java classes provide the framework for building models incorporating essential concepts like inheritance in Java, polymorphism in Java, abstraction, and encapsulation. They act as the design manual for the construction of objects, making Java development essential.