**Section 1:**

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

* Primitive data types are predefined by the java programming and named by their reserved key words. E.g byte,short,int,long,char etc. While reference data type store a reference to the memory location where the data is stored.
* Primitive type always has a value, it can never be null but Reference type can be null, which denotes the absence of a value.

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

* A scope is a region of the program where variables can be declared: inside a method or a block and can be only accessed within that method or block which is called Local variable. Outside of all functions and can be accessed from any method within a class which is called Global variable.

1. **Why is initialization of variables required.**

* Initialization is required to give a variable a correct initial value.
* Initializing variables also helps to avoid bugs and improve code readability.

1. **Differentiate between static, instance and local variables**.

* Static variables are declared using the static keyboard within a class and are shared among all instances of the class. Instance variables are declared inside the class but outside the body of the method and are unique to each instance of the class. Local variables are declared inside a method or a block and are destroyed when the method or block is exited.

1. **Differentiate between widening and narrowing casting in java.**

* Widening casting(upcasting) is the the process of converting a value of a smaller data type to a larger data type. This is done by the complier as there is no loss of information. While Narrowing casting(downcasting) is the process of converting a value of a larger data type to a smaller data type. There maybe loss of information and therefore this must be done by the programmer.

**6**. **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 | True, false |
| Char | 2 | ‘\0000’ | ‘\0000’ to ‘\ffff’ |
| Byte | 1 | 0 | -128 to 127 |
| Short | 2 | 0 | -32,768 to 32,767 |
| Int | 4 | 0 | -2,147,483,648 to 2,147,483,648 |
| Long | 8 | 0L | -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 |
| Float | 4 | 0.0f | 1.4E-45 to 3.4E+38 |
| Double | 8 | 0.0 | 4.9E-324 to 1.8E+308 |

1. **Define package as used in java programming.**

* A package in Java is a way to group related classes, sub-packages and interfaces collectively based on functionality.
* Also a package can be defined as a namespace that organizes a set of related classes and interfaces.

1. **Explain the importance of using Java package.**

* They make it easier to maintain and update code by organizing code into logical units.
* They make it easier to locate and use classes, interface, enums and annotations.
* They provide access protection by allowing classes to be declared public or private.
* They promote code reuse by allowing classes to be shared across.