Assignment: 1

Assignment Name: Java Get StartedJava SyntaxJava OutputJava CommentsJava VariablesJava Data TypesJava Type CastingJava OperatorsJava StringsJava MathJava BooleansJava If...ElseJava SwitchJava While LoopJava For LoopJava Break/ContinueJava Arrays.

1. **Java Syntax:**

- Java programs start with a `public class` declaration that matches the file name.
- Java statements must end with a semicolon ;.
- White spaces and indentation are used for code readability but are not required by the compiler.

2. **Java Output:**

- You can use `System.out.println("Hello, World!");` to print text to the console.
- **`System.out.print()`** can be used to print without a newline character at the end.

3. **Java Comments:**

- Single-line comments are created using //, and they continue to the end of the line.
- Multi-line comments are created using /* */ and can span multiple lines.

4. **Java Variables:**

- Variables store data and have a specific data type.
- Variable names should be meaningful and follow naming conventions (e.g., camelCase).
- Variables need to be declared and optionally initialized before use.

5. **Java Data Types**:

- Java has primitive data types, including `int`, `double`, `char`, `boolean`, and more.
- Reference data types include classes (e.g., `String`) and custom objects.
- Choosing the right data type is essential for memory efficiency and type safety.

6. **Java Type Casting:**

- Type casting is used to convert a value from one data type to another.
- Implicit (automatic) casting can be done if there's no data loss (e.g., int to double).
- Explicit casting is required when there may be data loss (e.g., double to int).

7. **Java Operators:**

- Arithmetic operators: +, -, *, /, % (modulo).
- Relational operators: ==, !=, <, >, <=, >=.
- Logical operators: && (AND), || (OR), ! (NOT).
- Bitwise operators: &, |, ^, <<, >>, >>>.

8. **Java Strings:**

- Strings in Java are objects of the String class.
- You can concatenate strings using the + operator.
- Strings are immutable, meaning their values cannot be changed after creation.

9. **Java Math:**

- Java's Math class provides various mathematical functions (e.g., Math.sqrt(), Math.pow()).
- You can use standard operators for basic arithmetic operations.

10. **Java Booleans:**

- The boolean data type can have values true or false.
- Booleans are commonly used in conditional statements to make decisions.

11. **Java If...Else:**

- The if statement evaluates a condition and executes code if the condition is true.
- The else clause provides an alternative code path if the if condition is false.

12. **Java Switch:**

- The switch statement allows you to test a variable against a list of values.
- case labels define specific values to match, and default is executed when no cases match.

13. **Java While Loop:**

- The while loop repeatedly executes a block of code while a given condition is true.
- Be careful not to create infinite loops without a way to exit.

14. **Java For Loop:**

- The for loop is often used for iterating over a range of values.

- It consists of an initialization statement, a condition, and an increment/decrement statement.

15. Java Break/Continue:

- break is used to exit a loop prematurely, stopping further iterations.
- continue is used to skip the rest of the current iteration and proceed to the next one.

16. Java Arrays:

- Arrays are collections of elements of the same data type.
- Arrays have a fixed size and are declared with a specific data type (e.g., int[]).
- You can access elements using an index, starting from 0 (e.g., myArray[0])

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