**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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