Java Programming Language Reference Sheet

Comments:

```
// This is a single-line comment
/* This is a
   multi-line comment */
```

Class and Main Method:

```
public class MyClass
{
    public static void main(String[] args)
    {
        // Your code goes here
    }
}
```

Data Types:

- int: Integer
- float: Floating-point
- double: Double-precision floating-point
- char: Character
- boolean: Boolean (true or false)
- String: String of characters
- byte: Byte
- short: Short
- long: Long

Variables:

```
int age = 25; // Declaration and initialization
```

Input/Output:

```
System.out.println("Hello, World!"); // Output
Scanner scanner = new Scanner(System.in); // Input
int age = scanner.nextInt();
```

Operators:

- Arithmetic: +, -, *, /, %
- Comparison: ==, !=, <, >, <=, >=
- Logical: && (and), || (or), ! (not)
- Assignment: =, +=, -=, *=, /=
- Increment/Decrement: ++, --
- Ternary: (condition) ? true_expression : false_expression

Control Flow:

- if, else if, else: Conditional statements
- while: Loop
- for: Loop with initialization, condition, and increment
- switch: Multiway branching

Functions (Methods):

```
public int add(int a, int b)
{
   return a + b;
}
```

Classes and Objects:

```
class Student
{
   String name;
   int age;
}
```

Objects:

```
Student student1 = new Student();
```

Arrays:

```
int[] numbers = new int[5]; // Declaration and initialization
int[] numbers = {1, 2, 3, 4, 5}; // Declaration and initialization
```

Packages:

```
import java.util.*; // Import a package
```

Exception Handling:

```
try
{
    // Code that may cause an exception
}
catch (Exception e)
{
    // Handle the exception
}
```

Standard Libraries:

- java.lang: Core classes
- java.util: Utility classes
- java.io: Input and output
- java.util.Scanner: Input handling

Memory Allocation:

- new: Create an object
- delete: Release allocated memory (handled automatically)

Compile and Execute:

```
$ javac YourProgram.java // Compile
$ java YourProgram // Execute
```