Java Fundamentals: Primitive Types, Variables and Arrays

1. Primitive Types and Variables:

Java provides 8 primitive types:

- byte, short, int, long
- float, double
- char
- boolean

Each is used based on memory and precision needs.

Example:

```
int age = 25;
boolean isActive = true;
```

2. Number Systems:

Java supports decimal, binary, octal, and hexadecimal:

```
int dec = 100;
int bin = 0b1100;
int oct = 012;
int hex = 0xFF;
```

3. Arrays:

Arrays store multiple values of the same type.

Example:

```
int[] numbers = new int[5];
String[] names = {"Alice", "Bob", "Charlie"};
```

Arrays are zero-indexed and fixed in size.

4. Common Array Operations:

- Access: numbers[2]

- Length: numbers.length
- Looping: for, for-each

Example:

```
for (int num : numbers) {
    System.out.println(num);
}
```

5. Quiz Topics:
- Identify data types and valid declarations
- Convert number systems
- Access and modify array elements

Summary:

Understanding primitive types and arrays is foundational to Java programming. They form the base for memory handling, performance, and data structures in Java.