Answers to Java Programming Questions

1. The `static` keyword in Java is used to indicate that a particular member belongs to the class itself, rather than to instances of the class. Static members are shared among all instances of the class.

```
public class MyClass {
   public static int staticVar = 5;
}
```

2. In Java:
- A `final` variable can only be assigned once.
- A `final` method cannot be overridden by subclasses.
- A `final` class cannot be extended.

```
public final class FinalClass {
   public final void finalMethod() {}
}
```

3. Method overloading in Java occurs when two or more methods in the same class have the same name but different parameters.

```
public class MyClass {
   public void myMethod(int a) {}
   public void myMethod(String b) {}
}
```

4. Static methods cannot refer to 'this' or 'super' because they are not associated with any instance of the class.

```
public class MyClass {
   public static void staticMethod() {
      // Cannot use 'this' or 'super' here
   }
```

```
}
```

5. In Java:
- `System.out.print` writes data to the standard output stream without a newline.
- `System.out.println` writes data to the standard output stream with a newline.
- `System.err.print` writes data to the standard error stream.

```
System.out.print("Hello");
System.out.println(" World");
System.err.print("Error");
```

6. To insert a new node at the end of a singly linked list:

```
public void insertAtEnd(Node head, int data) {
   Node newNode = new Node(data);
   if (head == null) {
      head = newNode;
   } else {
      Node temp = head;
      while (temp.next != null) {
         temp = temp.next;
      }
      temp.next = newNode;
   }
}
```

7. Insertion at the beginning of a doubly linked list requires updating two links (next and prev), whereas in a singly linked list, only one link (next) needs to be updated.

Example for Doubly Linked List:

```
public void insertAtBeginning(DoublyNode head, int data) {
   DoublyNode newNode = new DoublyNode(data);
   if (head != null) {
      head.prev = newNode;
      newNode.next = head;
   }
   head = newNode;
}
```

Example for Singly Linked List:

```
public void insertAtBeginning(Node head, int data) {
   Node newNode = new Node(data);
   newNode.next = head;
   head = newNode;
}
```

8. A `final` class cannot be extended in Java.

```
public final class FinalClass {}
// The following will cause a compile-time error
// public class SubClass extends FinalClass {}
```

9. A static block in Java is used to initialize static variables.

```
public class MyClass {
   static int staticVar;
   static {
      staticVar = 10;
   }
}
```

10. To delete a node from a singly linked list given only access to that node, copy the data from the next node to the current node and delete the next node.

```
public void deleteNode(Node node) {
   if (node == null || node.next == null) {
      return; // Cannot delete
   }
   node.data = node.next.data;
   node.next = node.next.next;
}
```