1. Every class in Java extends the ___Object_________ class either directly or indirectly.

2. The ___super_________ keyword is used to call a method of the super class.

3. Which of the following is used in Java to implement polymorphism? ___A_________
   A) late binding
   B) early binding
   C) the book’s binding
   D) compile-time binding

4. Suppose class CheckingAccount extends, in other words is a subclass of, class BankAccount. Given the code fragment below, determine the first line that would generate an error (either compile-time or run-time). ___D________

   BankAccount \( b = \) new BankAccount();
   CheckingAccount \( c = \) new CheckingAccount();
   \( b = c; \)
   \( c = b; \)

   A) line 1
   B) line 2
   C) line 3
   D) line 4
   E) None: this is a trick question

5. Suppose class SavingsAccount extends class BankAccount. Given the following declaration:

   SavingsAccount \( s = \) new SavingsAccount(0.1); // an interest rate of 10%

Which of the following Java statements are correct and evaluate to true? ___B________

i. \( s \) instanceof SavingsAccount
ii. SavingsAccount instanceof \( s \)
iii. \( s \) instanceof BankAccount
iv. CheckingAccount instanceof \( s \)

A) i.
B) i. & iii.
C) ii. & iv.
D) i.-iv.
6. Suppose that an intermixed sequence of stack push and pop operations are performed. The pushes push the integers 0 through 9 in order; the pops print out the return value. Which of the following sequence could not occur? ______B_________

A) 4 3 2 1 0 9 8 7 6 5
B) 4 6 8 7 5 3 2 9 0 1
C) 2 5 6 7 4 8 9 3 1 0
D) 4 3 2 1 0 5 6 7 8 9

7. If we implement a stack using resizing array, when and how is the array resized?

Double the size when it is full, shrink it to half when it is quarter full.

8. What does the following code fragment print when \( n \) is 50? In general, what does it do when presented with a positive integer \( n \)?

```java
Stack<Integer> s = new Stack<Integer>();
while (n > 0) {
    s.push(n % 2);
    n = n / 2;
}
while (!s.isEmpty())
    System.out.print(s.pop());
```

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It prints out the binary representation of \( n \)

9. Do you have any feedback, comments, or suggestions on the class so far? Thanks.