

Sample Final Exam (Chapters 12 to 17)

Each question worth 20%

Name_____

- 1) Write a recursive method (just a method—not a complete program) that returns `true` if the string it is passed is null or is made up exclusively of one or more occurrences of the letter 'A', and `false`, otherwise.

- 2) What is displayed when the following method is passed 2:

```
public void f(int x)
{
    System.out.println("A");
    if (x >= 0)
    {
        System.out.println(x);
        f(x-2);
        System.out.println("x");
    }
    System.out.println("D");
}
```

- 3) Write a method `rotate` (just a method—not a complete program) that removes the first node on a linked list and places it at the end of the list. If the list is empty or has only one node, `rotate` has no effect on the list. Assume each node has a `link` field that points to the next node. The link field of the last node on the list contains `null`. Assume your method is in the linked list class. Thus, it has direct access to the `first` field that points to the first node on the list.

- 4) Write a complete program in which you read from the file `bert.txt`, `bert.txt` contains integers. Your program should count the number of integers that `bert.txt` contains and write this count to the file `ernie.txt`. For example, if `bert.txt` contains five integers, your program should write

```
count = 5
```

to `ernie.txt`. Do NOT perform robust input—assume `bert.txt` contains only valid integers.

- 5) Write method that is passed an `Object` array whose length is 3. The first slot of the `array` points to an `A` object; the second slot points to a `B` object; the third slot points to a `C` object. The `A`, `B`, and `C` classes all have their own `display` method. Your method should call the `display` method for each of the three objects.