QUIZ 1
CMPS 12a - Spring 02
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Name: __________________________
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This exam is closed book, closed notes, no electronic devices. Show all work.
Partial credit given for partial solutions. Presentation counts! Be legible and
coherent for full credit.

Question 1: __________ (out of 20)
Question 2: __________ (out of 20)
Question 3: __________ (out of 20)
Question 4: __________ (out of 20)
Question 5: __________ (out of 20)

Total: __________ (out of 100)
1. (20 points)
   In the following statement of Java code, list the comment, keyword, identifier, literals, operators and punctuation.

   ```java
   int evenSum = 2+4+6+8; // Sum of first 4 even numbers.
   ```

   (a) Comment: // Sum of first 4 even numbers.
   (b) Keyword: int
   (c) Identifier: evenSum
   (d) Literals: 2 4 6 8
   (e) Operators: = +
   (f) Punctuation: ;

2. (20 points)
   Consider the following code fragment:

   ```java
   int a = 7;
   double b = a++ / 2.0;
   ```

   (a) What is the value of a after this piece of code executes? **Solution:** 8, because of the effect of the increment operator ++.

   (b) What is the value of b after this piece of code executes? **Solution:** The hard part is the second line. The increment operator takes precedence over the division. Since it is in the postfix position, it increments the value of a to 8 but returns the value 7 to the expression. Then the division of 7/2.0 returns the value 3.5. Floating point division is used because 2.0 is a double literal. Finally (because assignment has the lowest precedence), the result of this is assigned to b. So the answer is 3.5.
3. (20 points)
What, if anything, does the following code fragment print out?

**Careful!** The “else” belongs to which “if”?

```java
int x = 1;
if (x < 10)
    if (x > 5)
        System.out.println("The answer is between five and ten.");
else
    System.out.println("The answer is over ten.");
```

**Solution:**
First, x is assigned the value 1. Then, the first condition \( x < 10 \) is true. So the second condition \( x > 5 \) is evaluated. This is false. Therefore, control passes to the “else” clause (which is associated with the second “if” because there are no curly braces to change the association). Thus, it prints out:
The answer is over ten.
4. (20 points)
Write a code fragment which uses a loop to print out the first $k$ integers in a vertical line. You can assume that $k$ has already been assigned some value and you don’t need to input it.

For example, if the value of $k$ is 5, your code fragment should print out:

```
1
2
3
4
5
```

```java
for (int i = 1; i <= 5; i++)
{
    System.out.println(i);
}
```
5. (20 points)

Draw a flowchart for the following algorithm:

input an integer X
in a loop, do the following:
   print out X
   if X is less than 10 then exit the loop
   otherwise, set X to equal X-5
end of loop

Comment: If X is at least 6, this code has the effect of computing 5 plus X modulo 5. Otherwise, it does nothing.