Assignment #1

Submit the first 3 problems with word doc or image files. See instruction how to submit the 4th coding problem.

1. (5 points) What are the binary, octal and hexadecimal representations of decimal number 243? Show your manual steps.
2. (5 points) What are the values of the following expressions?
   1. 4 + 2 \* 3
   2. 10 / 3
   3. 10 / 3.0
   4. 10 % 3
   5. 10 % 3.0
3. (10 points) Let’s say int x = 19, y = 3; what are the values of x and y after executing each of the following statements? The statements do not affect each other.
   1. x \*= y;
   2. x /= y;
   3. x \*= y++;
   4. x %= --y;
   5. x = (x < y) ? y : x;
   6. x = x << y;
   7. x = x >> y;
   8. x = x | y;
   9. x = x & y;
   10. x = x ^ y;
4. (10 points) Write a full program to calculate factorial function:
   1. Definition:
   2. Write a Java function for factorial.
   3. Write a set of unit tests for it.
   4. Comment your code.
   5. Submit the code in a zip file with your student name as the filename, e.g. *john.zip* that includes both the production code and test code.
5. (10 points) Write a full program to calculate GCD of two integers:
   1. GCD: greatest common divider, e.g. GCD(15,35) = 5.
   2. GCD is always positive even if one of the integer is negative.
   3. Write a Java function to compute gcd of two integers.
   4. Write a set of unit tests for it.
   5. Comment your code.
   6. Same submission as the previous problem.