ESC101 : Fundamental of Computing

Lab 2 for 6th August 2008

1. **Printing a pattern :**
   Write a Java program to print the following 5-line pattern on screen:

   ```
       1
      121
     12321
    1234321
   123454321
   ```

2. **Swapping the first 3 digits with the last 3 digits of a 6-digit number:**
   Declare an integer variable `num`. Assign a six-digit positive value to `num`. The digit in Lakh's place of *num* cannot be zero. Now write a code to obtain an integer which has the first three digits of `num` swapped with its last three digits.

   In other words, let $num = \alpha\beta\gamma\delta\theta\tau$, $(\alpha \neq 0)$. Then, obtain the other integer as $\delta\theta\tau\alpha\beta\gamma$.

   Hint: Use the arithmetic operators $+, -, *, /$ and %.

3. **Average and Variance :**
   Declare five variables `a1`, `a2`, `a3`, `a4` and `a5` of type `double`. Assign them some positive values. Write a code to calculate and print their *average* and *variance*. You may use the following formulae.

   (a) Average of k numbers $a_1, a_2, \cdots a_k$ is

   $$Avg, \bar{a} = \frac{1}{k}\sum_{i=1}^{k} a_i$$

   (b) Variance of k numbers $a_1, a_2, \cdots a_k$ is

   $$Var = \frac{1}{k}\sum_{i=1}^{k} (\bar{a} - a_i)^2$$