**Review Ques 5**

1. As precisely as you can (two lines each, at most), define the following. Your definition should mention inputs, outputs and side-effects:
   * Functions
   * Predictes
2. Assume a purely logic language where any word starting with upper case is an unbound variable. In that logical language what are the outputs and side-effects of the following:
   * emp(tim,42) = emp(Name,Age)
   * emp(Who,42) = emp(tom, Age)
   * emp(tom,42) = emp(tim,Age)
3. Closures
   * Define "closures"?
   * In the following, when the add variable is initialized, what are the two parts of it contents?
   * In the following, When the above add is created, then used 3 times, what is returns?

add = (function () {

var counter = 0;

return function () {return counter += 1;}

})();

add();

add();

add();

1. Type inference
   * It is claimed that languages that support type inference are less buggy. Why?
   * Why might type inference be easier in Python than Java?
2. Folding
   * What is folding?
   * What does the following expression return? *foldl (+) 0 [1,2,3,4,5]*
3. Erlang
   * Nome one way Erlang is fundamentally different to Python.
   * Describe uses of Erlang in 2 industrial applications. What aspects of those applications lead to the use of Erlang?
4. Heuristics
   * what is YAGNI? Describe an industrial scenario where YAGNI might save development costs.
   * what is the rule of 3? Describe an industrial scenario where YAGNI might save development costs.
5. Patterns: Suppose you are working with a 3-tier architecture system for employee management. The system composed of a database layer, business logic, and GUI. Many parts of codes are reused in this system. As an example: the database needs to know the valid ranges for age and so does the GUI.
   * What design pattern might be useful for the business logic associated with this application? Give reasoning on behalf of your answer.