Q1. A token may be represented through a tuple having Category and Pointer to table it belongs.

Develop a data structure TABLE through hashing to be used for storing-retriving an item.
The operations to be implemented are

  int Insert(item) :
    if already not there then insert the new item and return location,
    if already there then return location.
  int Search(item) :
    if found then return location.
    if not found then return 0.

Use this sturcture for three seperate tables i.e. symbol table (to store identifier), letral table (to store litral), keyword table (to store keyword) etc.

Example :

i/p   intrst= intrst + (amount * rate * time) / 100;

o/p   intrst   <ID,1>

    =   <OP,4>   (assumed = is at loc 4)

    intrst   <ID,1>

    +   <OP,6>   (assumed = is at loc 6)

    (<BR,1>   (assumed = is at loc 1)

    amount <ID,2>

    *   <OP,8>   (assumed = is at loc 8)

    rate   <ID,3>

    *   <OP,8>

    time   <ID,4>

)   <BR,2>   (assumed = is at loc 2)

    /   <OP,7>   (assumed = is at loc 7)

    100   <LIT_NUM,1>