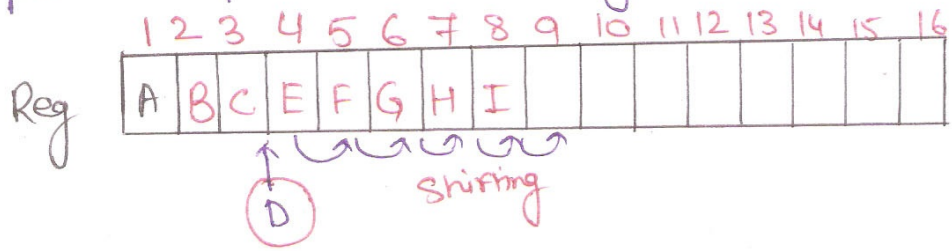
Insertion in An Array and its Algorithm

- Insertion is the operation in which a new value is added at a particular place in an array.



→ In this element D is to be inserted at place 4th.

→ All the elements after D has to be shifted.

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Reg[9] = Reg[8]
Reg[8] = Reg[7]
  :
Reg[5] = Reg[4]
Reg[4] = 'D'
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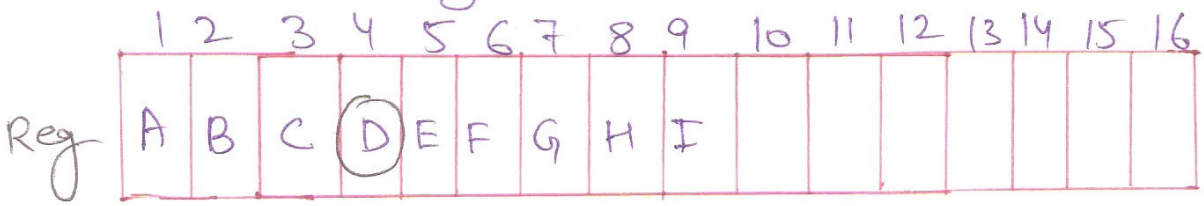
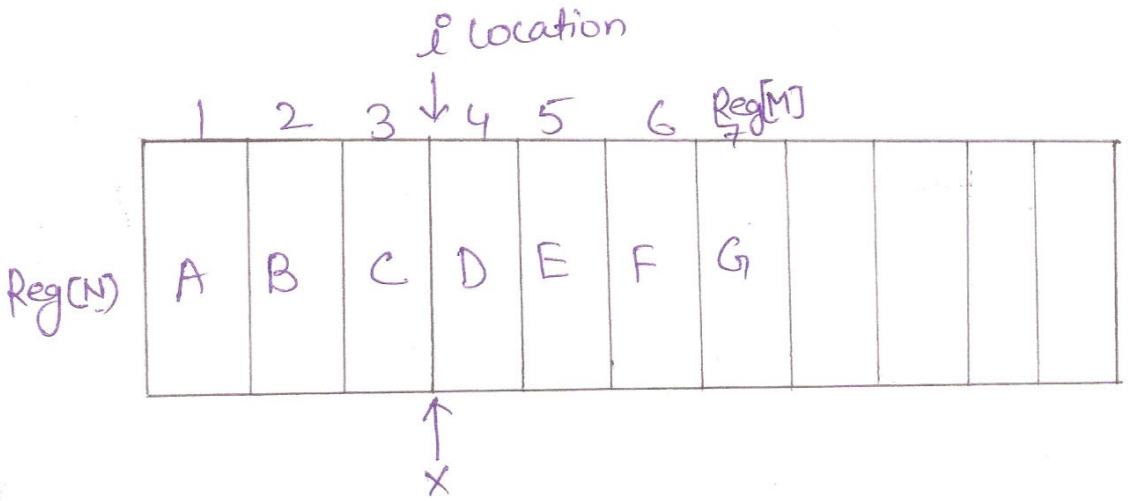


D is inserted and elements after Reg[4] are shifted to one place.

Algorithm:- Array Reg[N] with last element at Mth position. Value X is to be inserted at ith location.

→ Steps:
1. if (M<N) then BACK = M+1 else STOP
2. while (BACK > i) repeat steps 3 to 4
3. REG[BACK] = REG[BACK-1]
4. BACK = BACK-1;
5. REG[BACK] = 'X'
6. M = M+1
7. END.



Let Reg[10] an array with holding capacity of 10 elements but it has only 7 elements in it.

So N = 10, M = 7, i = 4

Step1 IF (M<N) then Back = M+1 else stop

7<10 true Back = 7+1

Step2 (while (Back > i) repeat 3to4

Shifting ,, Step3. Reg[8] = Reg[8-1] ⇒ Reg[8] = 'G'

Step 4 Back = 8-1 ⇒ 7

When Back = 4 then

Back > i ⇒ 4 > 4 false

then it goes to Step 5.

Reg[4] = 'X'

Step 6 M = M+1 (After insertion the Last element in Reg is at (M+1)th Location)

Step 7 END