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# Question 2:

+---+----+---+---+---+----+----+---+---+---+----+----+----+

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

+---+----+---+---+---+----+----+---+---+---+----+----+----+

| - | 27 | - | - | - | 10 | 19 | - | - | - | 36 | - | - |

+---+----+---+---+---+----+----+---+---+---+----+----+----+

Two collision happens with 10 one with 36 and one with 27 until it is put in the place 5

# Question 3:

Because if we have three collisions and we delete the element that is in the middle and we search for the last element we will not find it even though it is there

Example:

H(x) = x mod 5

Numbers = 5,10,15

Result

+---+----+----+---+---+

| 0 | 1 | 2 | 3 | 4 |

+---+----+----+---+---+

| 5 | 10 | 15 | - | - |

+---+----+----+---+---+

Delete 10 and search for 15

+---+----+----+---+---+

| 0 | 1 | 2 | 3 | 4 |

+---+----+----+---+---+

| 5 | - | 15 | - | - |

+---+----+----+---+---+

The search for 15 will result in False

# Question 4:

FUNCTION FindFirstRepetition(arr):  
 h <- hash table  
 for i in arr:  
 if i in h:  
 return i  
 else:  
 h[i] <- 1  
 end  
 end  
 return NO REPETING ELEMENT  
end

# Question 6:

FUNCTION FindMostOnLine(arr):  
 h <- hash table  
 max <- -inf  
 for i=0 ,i < arr.size:  
 for j=i+1 , j<arr.size:  
 x1 <- arr[i][0]  
 y1 <- arr[i][1]  
 x2 <- arr[j][0]  
 y2 <- arr[j][1]  
 m <- (y1-y2)/(x1-x2)  
 c <- y1 - m\*x1  
 if (m,c) in h:  
 h[(m,c)] <- h[(m,c)] + 1  
 else:  
 h[(m,c)] <- 1  
 end  
 if h[(m,c)] > max:  
 max <- h[(m,c)]  
 end  
 end  
 end  
 return max  
end

# Question 8:

FUNCTION FindIfConsecutive(arr):  
 h <- hash table  
 max <- - inf  
 min <- inf  
 for i in arr:  
 if i in h:  
 return False  
 else:  
 h[i] <- 1  
 end  
 if i > max:  
 max <- i  
 end  
 if i < min:  
 min <- i

end  
 end  
 if max - min + 1 == arr.size:  
 return True  
 end  
 return False  
end