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| ASSIGNMENT 2 |
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# Assignment 2

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| **Objective :**  To illustrate traversing of array elements to perform different operations.  **Outcome :**  Students will able to apply knowledge of one dimansional array to perform different operations like sum , average of array elements,maximum, minimum from given set of elements.  **Problem Statement :**  Write a Python program to store marks scored in subject “Fundamental of Data  Structure” by N students in the class. Write functions to compute following:  a) The average score of class  b) Highest score and lowest score of class  c) Count of students who were absent for the test  d) Display mark with highest frequency  **Algorithm :**  **1.** **list\_to\_dict:-**   1. **start** 2. **Intilise an empty dictionary.** 3. **for every i element in input\_list jump to step4 else step5.** 4. **if there is key i in dictionary then increment value by 1 else set it to 0 then increment value by 1.** 5. **Return list\_return** 6. **exit()**   **2.** **Mean:-**   1. **start** 2. **Intilise the add=0.** 3. **for every i element input\_list jump to step4 else step6.** 4. **add i to varible add jump to step5 else step3.** 5. **Return add/length(input\_list)** 6. **exit()**   **3.** **Minimum:-**   1. **start** 2. **Intilise the lower as first element of input\_list .** 3. **for every i element in input\_lists jump to step4 else step5.** 4. **if i is less than lower jump to step 5 else jump to step 3.** 5. **set lower = i jump to step 3.** 6. **Return lower** 7. **exit()**   **4. Maximum:-**   1. **start** 2. **Intilise the lower as first element of input\_list .** 3. **for every i element in input\_lists jump to step4 else step5.** 4. **if i is greater than higher jump to step 5 else jump to step 3.** 5. **set higher=i jump to step 3.** 6. **Return higher** 7. **exit()**   **5. Max\_frequency:-**   1. **start** 2. **Intilise the max as zero.** 3. **for key in di jump to step4 else step7.** 4. **if i equal to 0 jump to step 3 else jump to step 5.** 5. **if value of i is greater than max then jump to step 6 else jump to step 3.** 6. **max= i jump to step 3.** 7. **return max** 8. **exit()**   **Program/Code:** |
| list = [**90, 99, 98, 95, 94, 0, 0, 0, 0, 0, 45, 78, 98, 45, 56, 13, 98, 72, 65, 84, 48, 45, 94, 95, 96, 97, 99,90,90**]   def list\_to\_dict(input\_list):  dictionary = {}  for i in input\_list:  dictionary[i] = dictionary.get(i**, 0**) + **1** return dictionary   def mean(input\_list):  add = **0** for i in input\_list:  add += i  return add / len(input\_list)   def minimum(input\_list):  lower = input\_list[**0**]  for i in input\_list:  if i == **0**:  continue  else:  if lower > i:  lower = i  return lower   def maximum(input\_list):  higher = **0** for i in input\_list:  if i == **0**:  continue  else:  if higher < i:  higher = i  return higher   def max\_frequency(di):  max = **0** for i in di:  if i == **0**:  continue  elif di[i] > max:  max = i  return max   # The average score of class print("The average score of class : "**,** mean(list))  # Highest score and lowest score of class print("Highest score of class : "**,** maximum(list)) print("lowest score of class : "**,** minimum(list))  # Count of students who were absent for the test dict = list\_to\_dict(list) print("Count of students who were absent for the test : "**,** dict[**0**])  # Display mark with highest frequency frequency = list\_to\_dict(list) p = max\_frequency(frequency) print("Mark's with highest frequency is {} and its frequency is {} ".format(p**,**frequency[p])) |
| **Output :**  The average score of class : **64.96551724137932** Highest score of class : **99** lowest score of class : **13** Count of students who were absent for the test : **5** Mark's with highest frequency is **90** and its frequency is **3** |

**Time Complexity :**

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| sr no. | Function | Time Complexity |
| 1 | list\_to\_dict | O(n) |
| 2 | mean | O(n) |
| 3 | minimum | O(n) |
| 4 | maximum | O(n) |
| 5 | max\_frequency | O(1) |
| 6 | print | O(1) |

Total Time Complexity:= O(n)

Conclusion :-

Thus we have studied one dimensional array and used for performing various operations like ,The average score of class , Highest score and lowest score of class , Count of students who were absent for the test , Display mark with highest frequency