**Pre-release material**

**A teacher needs a program to record marks for a class of 30 students who have sat three computer science tests.**

**Write and test a program for the teacher.**

**•Your program must include appropriate prompts for the entry of data.**

**•Error messages and other output need to be set out clearly and understandably.**

**•All variables, constants and other identifiers must have meaningful names.**

**You will need to complete these threetasks. Each task must be fully tested.**

**TASK 1 – Set up arrays**

**Set-up one dimensional arrays to store:**

**•Student names**

**•Student marks for Test 1, Test 2 and Test 3**

* **Test 1 is out of 20 marks**
* **Test 2 is out of 25 marks**
* **Test 3 is out of 35 marks**

**•Total score for each student**

**Input and store the names for 30 students. You may assume that the students’ names are unique.**

**Input and store the students’ marks for Test 1, Test 2 and Test 3. All the marks must be validated on entry and any invalid marks rejected.**

**TASK 2 – Calculate**

**Calculate the total score for each student and store in the array.**

**Calculate the average total score for the whole class.**

**Output each student’s name followed by their total score.**

**Output the average total score for the class.**

**TASK 3 – Select**

**Select the student with the highest total score and output their name and total score.**

**Begin**

**// Solution of Task 1 and Task 2**

**DECLARE StudentName[1:30] As String**

**DECLARE Test1[1:30] , Test2[1:30] , Test3[1:30] , Total[1:30] As Integer**

**DECLARE GrandTotal AS Integer =0**

**FOR Count = 1 TO 30**

**// To input name of the student**

**Ouput “Please enter the name of student # ”, Count**

**INPUT StudentName[Count]**

**// To input marks of Test 1**

**INPUT Test1 [Count]**

**While (Test1 [Count]< 0 OR Test1 [Count]>20) DO**

**OUTPUT “ Please enter the marks in correct range i.e. 0 – 20 for Test 1”**

**INPUT Test1 [Count]**

**ENDWHILE**

**// To input marks of Test 2**

**INPUT Test2[Count]**

**While (Test2 [Count]< 0 OR Test2 [Count]>20) DO**

**OUTPUT “ Please enter the marks in correct range i.e. 0 – 25 for Test 2”**

**INPUT Test2 [Count]**

**ENDWHILE**

**// To input marks of Test 3**

**INPUT Test3 [Count]**

**While (Test3 [Count]< 0 OR Test3 [Count]>20) DO**

**OUTPUT “ Please enter the marks in correct range i.e. 0 –35 for Test 3”**

**INPUT Test3 [Count]**

**ENDWHILE**

**// To calculate the total of each student**

**Total[Count]=Test1[Count]+Test2[Count]+Test3[Count]**

**// To display the name and the total marks of each student**

**PRINT “Student Name: ”StudentName[Count], “ and his marks: ” , Total[Count]**

**// To calculate the grand total of the whole class, which will be used in calculation of class average**

**GrandTotal = GrandTotal + Total[Count]**

**NEXT Count**

**// Loop completed, Now calculate class average**

**ClassAverage = Sum/30**

**PRINT ClassAverage**

**// Solution of Task 3 with explanation**

**Description (max 3)**

**– set variable called Max to zero and variable called HighAchiever to dummy value**

**– loop 30 times to check each student’s total score in turn**

**– check student’s score against Max**

**– if student’s score > Max then**

**– … replace value in Max by student’s score and store student’s name in HighAchiever**

**– output HighAchiever and Max outside the loop**

**Pseudocode (max marks = 3)**

**DECLARE Max AS INTEGER = 0**

**DECLARE HighAchiever AS STRING =“xxxx”**

**FOR Count = 1 TO 30**

**IF Total[Count] > Max**

**THEN**

**Max = Total[Count]**

**HighAchiever = StudentName[Count]**

**ENDIF**

**NEXT Count**

**PRINT HighAchiever, Max**