IGCSE CS 0478 P2 2023 (1)

Marking Instructions in italics

AO2: Apply knowledge and understanding of the principles and concepts of computer science to a given context, including the analysis and design of computational or programming problems

0	1-3	4-6	7-9
No creditable response.	At least one programming technique has been used. *Any use of selection, iteration, counting, totalling, input and output.*	Some programming techniques used are appropriate to the problem. *More than one technique seen applied to the scenario, check the list of techniques needed.*	The range of programming techniques used is appropriate to the problem. *All **criteria stated for the scenario** have been covered by the use of appropriate programming techniques, check the list of techniques needed.*
	Some data has been stored but not appropriately. *Any **use** of variables or arrays or other language dependent data structures e.g. Python lists.*	Some of the data structures chosen are appropriate and store some of the data required. *More than one data structure **used** to store data required by the scenario.*	The data structures chosen are appropriate and store all the data required. *The **data structures used** store all the data required by the scenario.*

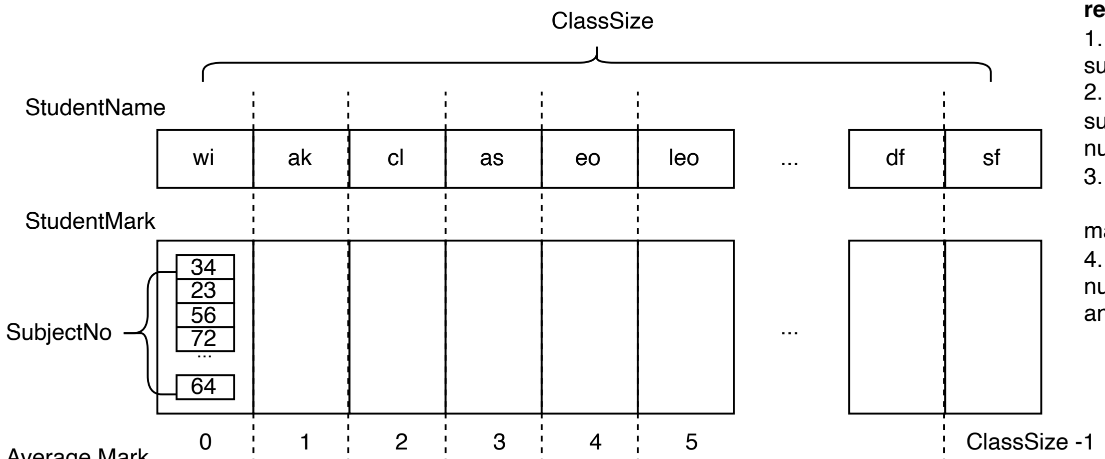
AO3: Provide solutions to problems by:

- **evaluating computer systems**
- **making reasoned judgements**
- **presenting conclusions**

0	1-2	3-4	5-6
No creditable response.	Program seen without relevant comments.	Program seen with some relevant comment(s).	The program has been fully **commented**.
	Some identifier names used are appropriate. *Some of the data structures used have meaningful names.*	The majority of identifiers used are appropriately named. *Most of the data structures used have meaningful names.*	Suitable identifiers with names meaningful to their purpose have been used throughout. *All of the data structures used have **meaningful names**.*
	The solution is illogical.	The solution contains parts that may be illogical.	The program is in a **logical order**.
	The solution is inaccurate in many places. *Solution contains few lines of code with errors that attempt to perform a task given in the scenario.*	The solution contains parts that are inaccurate. *Solution contains lines of code with some errors that logically perform tasks given in the scenario. Ignore minor syntax errors.*	The **solution is accurate**. ***Solution logically** performs all the tasks given in the scenario. Ignore minor syntax errors.*
	The solution attempts at least one of the requirements. *Solution contains lines of code that attempt at least one task given in the scenario.*	The solution meets most of the requirements. *Solution contains lines of code that perform most tasks given in the scenario.*	The solution **meets all the requirements** given in the question. *Solution performs all the tasks given in the scenario.*

IGCSE CS 0478 P2 2023 (2)

2023 spec 2a / 13



Average Mark	
mark >= 70	distinction
55 <= mark <70	merit
40 <= mark <55	pass
mark < 40	fail

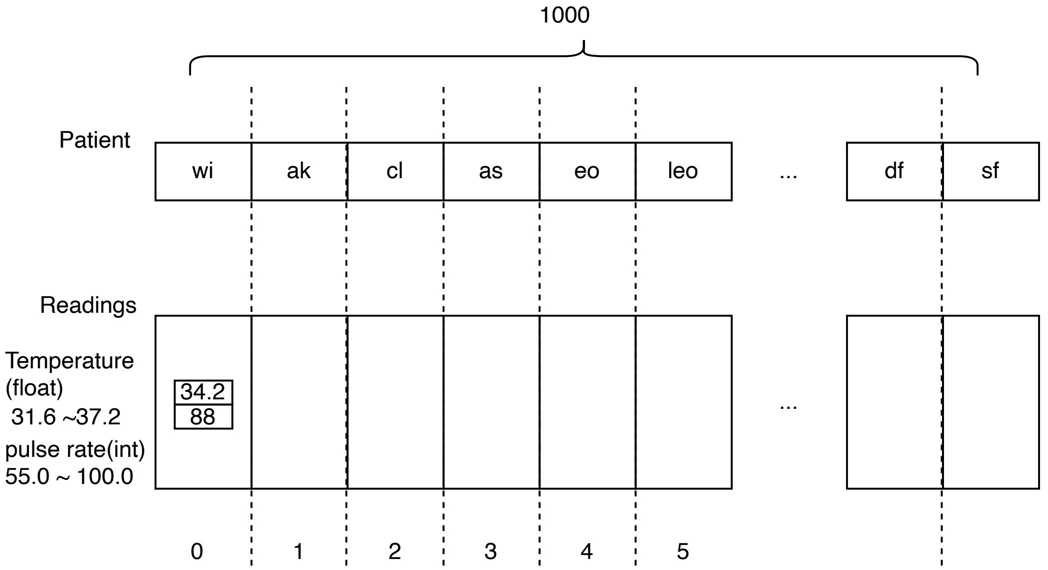
requirements:

1. total mark, each student, all their subjects
2. average mark, each student, all their subjects, rounded to the nearest whole number
3. output for each student
   name, combined total mark, average mark, grade awarded
4. calculates, stores and outputs the number of distinctions, merits, passes and fails for the whole class.

Key Point:

1. totaling two dimension array
2. average
3. round
4. counting

2023 spec 2b / 13



Temperature (float)
31.6 ~37.2
pulse rate(int)
55.0 ~ 100.0

Requirements:

takes the hospital number as a parameter

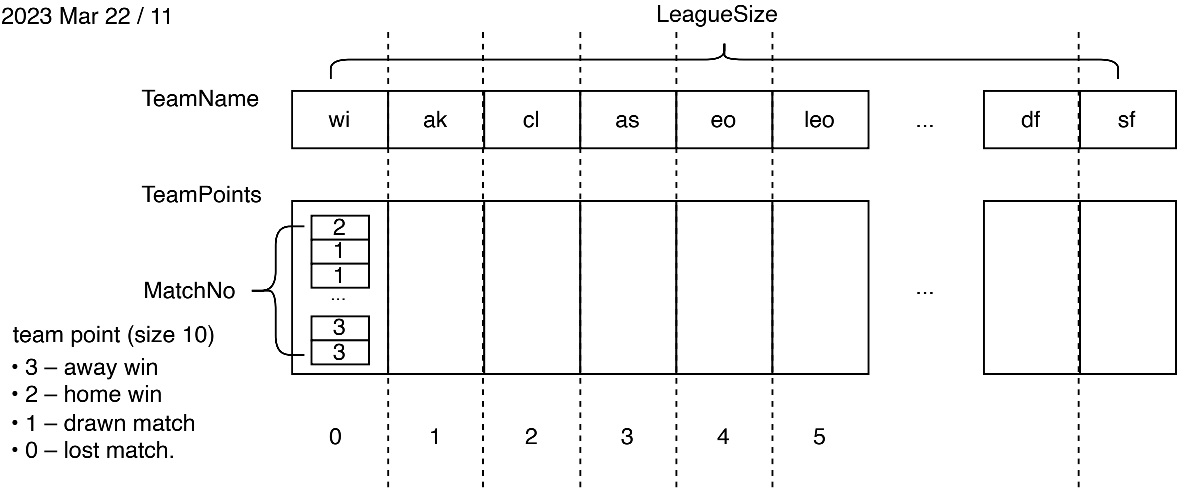
- checks if the number is valid
- outputs an error message and exits the procedure if the number is not valid
- if the hospital number is valid:

– output the patient’s name
– output ‘Normal readings’ if both the readings are within range
– output ‘Warning’ and the name of the reading e.g. ‘Pulse’ if one reading is out of range
– output ‘Severe warning’ and the names of the two readings ‘Pulse and temperature’ if both readings are out of range
– exits the procedure.

Key Point:

1. procedure
2. array index
3. output

2023 Mar 22 / 11



team point (size 10)

- 3 – away win
- 2 – home win
- 1 – drawn match
- 0 – lost match.

Requirements:

calculates the total points for all matches played for each team

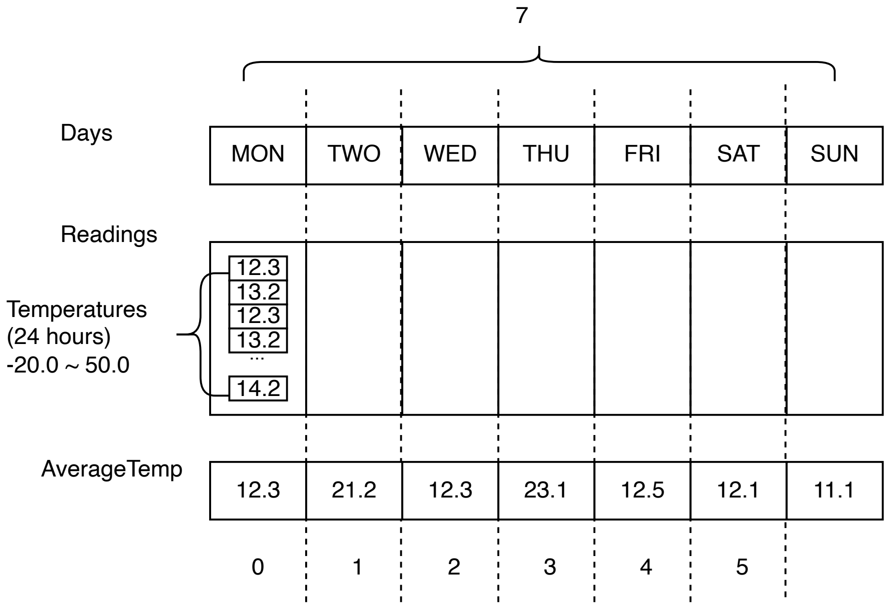
- counts the total number of away wins, home wins, drawn matches and lost matches for each team
- outputs for each team:
  - – name
  - – total points
  - – total number of away wins, home wins, drawn matches and lost matches
- finds and outputs the name of the team with the highest total points
- finds and outputs the name of the team with the lowest total points.

Key Point:

1. two dimension array
2. totaling
3. counting
4. max
5. min

IGCSE CS 0478 P2 2023 (3)

2023 jun 21



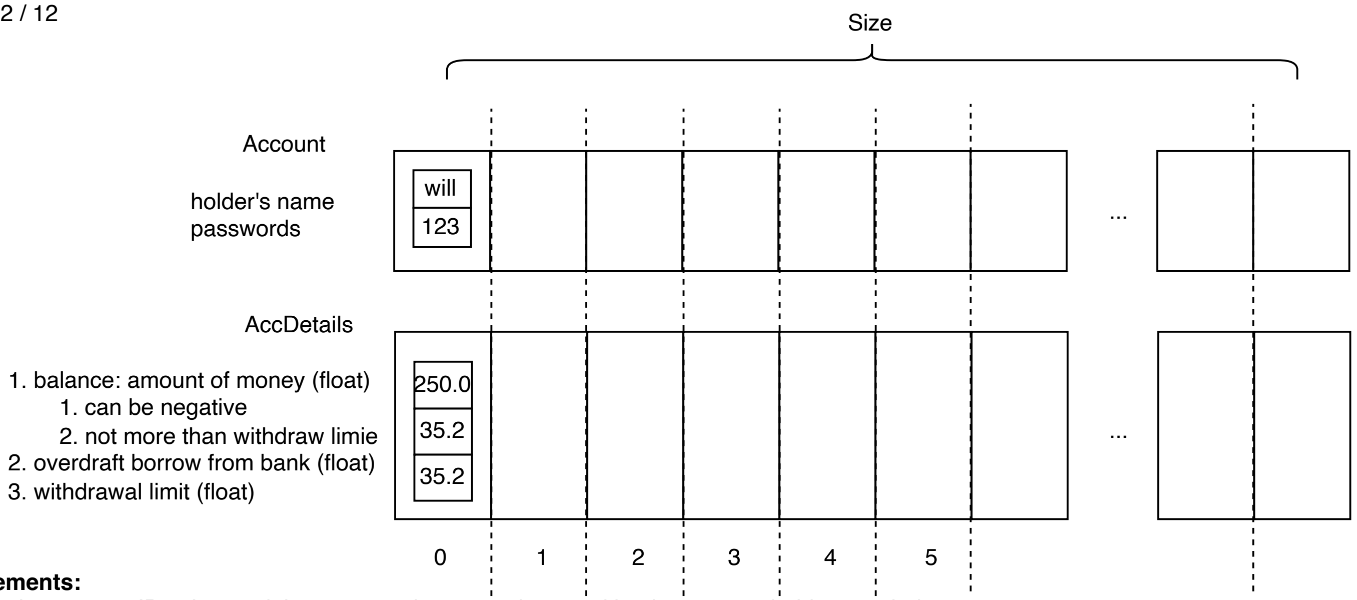
Requirements:

- input and validate the hourly temperatures for one week
- calculate and store the average temperature for each day of the week
- calculate the average temperature for the whole week
- convert all the average temperatures from Celsius to Fahrenheit by using the formula Fahrenheit = Celsius * 9 / 5 + 32
- output the average temperature in Celsius and in Fahrenheit for each day
- output the overall average temperature in Celsius and in Fahrenheit for the whole week.

Key Point:

1. Two dimension for loop input data
2. average
3. for loop
4. sum

2023 jun 22 / 12


Size
Account
holder's name
passwords
will
123
...
AccDetails
1. balance: amount of money (float)
1. can be negative
2. not more than withdraw limie
2. overdraft borrow from bank (float)
3. withdrawal limit (float)
250.0
35.2
35.2
...
0
1
2
3
4
5

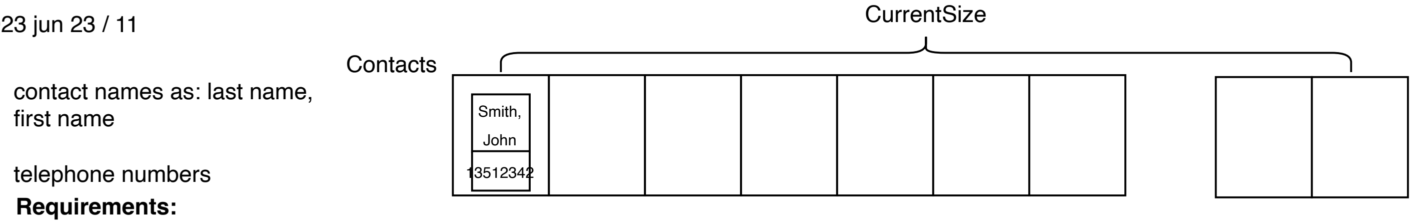
Requirements:

- checks the account ID exists and the name and password entered by the account holder match the name and password stored in Account[] before any action can take place
- displays a menu showing the four actions available for the account holder to choose from:
1. display balance
2. withdraw money
3. deposit money
4. exit
- allows an action to be chosen and completed. Each action is completed by a procedure with a parameter of the account ID.

Key Point:

1. producure, call procedure
2. while loop input
3. one dimension for loop

2023 jun 23 / 11



Requirements:

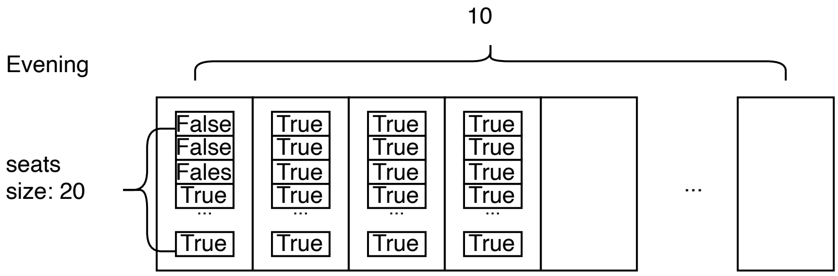
- display a menu of choices:
  - ○ enter new contact details
  - ○ display all the contact details
  - ○ delete all the contact details
- validate the menu input
- allow up to a maximum of five new contacts to be added to the array at any one time
- do not allow more than 100 contacts in total
- after new contacts have been added, sort the array by contact name, as long as there are at least two contacts in the array
- output the whole of the array
- delete the contents of the array.

Key Point:

1. while loop
2. menu output
3. input

IGCSE CS 0478 P2 2023 (4)

2023 nov 21 / 10



Requirements:

• counts and outputs the number of seats already booked for the evening

• allows the user to input the number of seats required

• validates the input

• checks if enough seats are available:

– if they are available

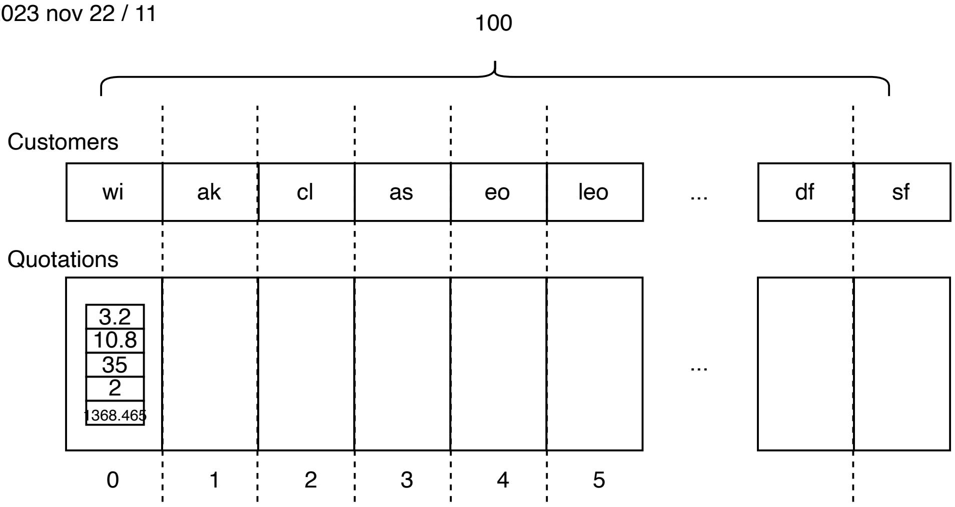
○ changes the status of the seats

○ outputs the row number and seat number for each seat booked

– if they are not available:

○ outputs a message giving the number of seats left or 'House full' if the theatre is fully booked.

2023 nov 22 / 11



Requirements:

• input a new customer's name, room length and room width

• check that each measurement is valid

• output an error message and require the measurement to be re-entered until it is valid

• calculate the area of the room by multiplying together the length of the room and the width of the room

• input the choice of wood and find its price per square metre

• calculate the price of the wood needed

• store all data in the relevant array

• output the customer's quotation to include: the name of the customer, the choice of wood and the calculated price of the wood required

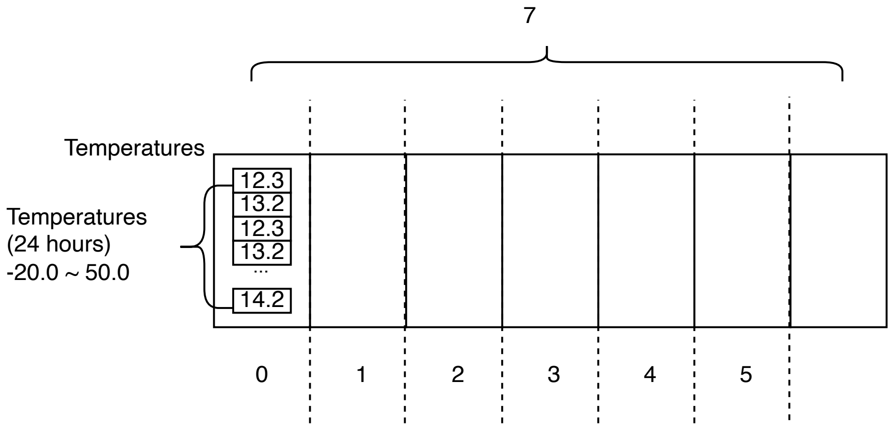
• continue to accept the next customer.

You will need to initialise WoodType[] and Price[]

1. length of room (float) 1.5 ~ 10.0
2. width of room (float) 1.5 ~ 10.0
3. area (int) round up round(width * length)
4. choice index (int).   1,2,3
5. price of wood (float). area * price

	0	1	2
WoodType	Laminate	Pine	Oak
Price	29.99	39.99	54.99

2023 Nov 23 / 10



Requirements:

• finds the maximum and minimum temperatures for each day

• calculates the average temperature for each day

• outputs for each day:

– name of the day, for example Monday

– maximum temperature

– minimum temperature

– average temperature

• finds the maximum and minimum temperatures for the week

• calculates the average temperature for the week

• outputs:

– maximum temperature for the week

– minimum temperature for the week

– average temperature for the week.

You do not need to initialise the data in the array Temperatures[]

Variables:
MaxDay maximum temperatures for a day
MinDay minimum temperatures for a day
AvDay   average temperatures for a day

Key Point:

1. Two dimension for loop input data
2. average
3. for loop
4. sum

IGCSE CS 0478 P2 2023 (5)

评分重点:

1. 一定要记得写注释
2. 该定义的变量一定要定义, 并且变量名要有意义，不要a,b,c,d
3. 看清楚题目，该写procedure, function还是直接写代码

练习的时候如果不清楚写法，可以把各个步骤分开写，然后慢慢练习如何整理到一起

做题步骤:

1. 读题，讲题目画成图，理解清楚题目的意图。多个数组之间画好对应关系，数据是怎么对应的
2. 整理清楚题目，是否需要使用procedure或者function
3. 在脑子中整理好要用到哪几种基本算法
    1. 是否需要循环，选for还是while
    2. counting\totaling\average
    3. max\min
    4. 几维数组，是否需要用到二重循环
4. 整理好Input，需要哪些中间变量，程序中的固定数字在最前面声明为常量。
5. 对于二维数组，可以给自己先写几个如何取里面的值的代码在旁边，思考的时候好用
6. 先把整个题目的大框架在脑子里面整理好，然后再想小需求如何满足。

一些比较麻烦的问题怎么规避:

1. 有些题目要求写procedure，但是明显需要全局变量保存状态的，可以用返回值来获取。

几种经常出的题目类型写法:

1. totaling
2. average
3. counting
4. max/min
5. 输入检测并重新输入
6. procedure
7. menu and choice
8. continuous input menu

常用方法:

1. range(n)
2. round(n, 1)
3. int()
4. float()
5. str()