# Homework 3 Iteration

1. Write a pseudocode algorithm using a FOR loop to read five lowercase letters and output the largest and smallest. (a is less than b). [6]

2. Write a pseudocode algorithm that asks a user for a password. They are allowed three attempts to type the correct password, which is “Tues1212”.

If they type the correct password, output “Password accepted”, otherwise output “Password rejected”. [6]

# 3. (a) Complete the trace table below with the values supplied. [4]

sunshine 🡨 0

maxHours 🡨 0

minHours 🡨 100

totalSunshine 🡨 0

REPEAT

sunshine 🡨 INPUT

IF sunshine > maxHours THEN

maxHours 🡨 sunshine

ENDIF

IF sunshine < minHours THEN

minHours 🡨 sunshine

ENDIF

totalSunshine 🡨 totalSunshine + sunshine

UNTIL sunshine = -1

OUTPUT “Max sunshine hours:”, maxHours

OUTPUT “Min sunshine hours:”, minHours

OUTPUT “Total sunshine hours”, totalSunshine

Test Data: 2 7 3 8 -1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **sunshine** | **maxHours** | **minHours** | **totalSunshine** | **Output** |
| 0 | 0 | 100 | 0 |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

# (b) What is the problem with the algorithm above? [2]

# (c) This time the algorithm uses an entry condition WHILE loop. Complete the trace table to see the difference between the two.

sunshine 🡨 0

maxHours 🡨 0

minHours 🡨 100

totalSunshine 🡨 0

sunshine 🡨 INPUT

While sunshine <> -1

IF sunshine >maxHours THEN

maxHours 🡨sunshine

END IF

IF sunshine < minHours THEN

minHours 🡨 sunshine

ENDIF

totalSunshine 🡨sunshine + totalSunshine

sunshine 🡨INPUT

END WHILE

OUTPUT “Max sunshine hours:”, maxHours

OUTPUT “Min sunshine hours:”, minHours

OUTPUT “Total sunshine hours”, totalSunshine

Input data: 2 7 3 8 -1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sunlight** | **maxHours** | **minHours** | **TotalSunshine** | **Output** |
| 0 | 0 | 100 | 0 |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

[2]

[Total 20 Marks]