Name: Class: Mark:

1. The pseudocode algorithm below is intended to calculate the average birth weight of all babies born in a hospital over a period of time, and the maximum and minimum birth weight recorded. It does not give the correct results.

1 total = 0

2 maximum = 0

3 minimum = 100

4 numB = 0

5 weight = 0

6 while weight != -1

7 weight = float(input("Please enter weight"))

8 if weight != -1

9 total = total + weight

10 if weight > maximum

11 weight = maximum

12 endif

13 if weight < minimum

14 weight = minimum

15 endif

16 numB = numB + 1

17 endif

18 endwhile

19 average = total / numB

20 print(numB)

21 print(average)

22 print(maximum)

23 print(minimum)

(a) Give **five** line numbers which show the program structure **sequence**. [1]

(b) Give the line numbers on which **iteration** starts and ends. [2]

(c) Give the line numbers on which **selection** starts and ends. [2]

(d) How will the user indicate that all the baby weights have been entered? [1]

(e) There are **two** logic errors in the algorithm. Find and correct the errors. [2]

(f) Complete the trace table below for the corrected algorithm, if the user enters the following values: 3.0, 4.4, 2.8, 3.4, -1 [6]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **total** | **maximum** | **minimum** | **numB** | **weight** | **average** | **OUTPUT** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

2. A program produces statistics on the number of passes and distinctions in an exam, and the number of candidates who took the exam. A student achieving a Distinction is also counted among the number of students who passed the exam. The exam is graded as follows:

50-79 Pass

80-100 Distinction

The program has been written in pseudocode, but has errors in it.

The programmer tests it by inputting the exam results 60, 65, 70, 90, 95, 100. The end of data entry is signified by entering a dummy mark of -1.

The program outputs the following results:

Number of students: 7

Number of students with pass or distinction: 6

Number of students with distinction: 0

Average mark: 1.0

The pseudocode is given below:

mark = 0

studentpass = 0

distinction = 0

numstudents = 0

totalmark = 0

while mark != -1

mark = int(input("please enter mark, -1 to end: "))

if mark >= 50 then

studentpass = studentpass + 1

else

if mark >= 80 then

distinction = distinction + 1

endif

endif

numstudents = numstudents + 1

totalmark = totalmark + 1

endwhile

averagemark = totalmark / numstudents

print("Number of students: " + str(numstudents))

print("Number of students with pass or distinction: " +   
 str(studentpass))

print("Number of students with distinction: " + str(distinction))

print("Average mark: " + str(averageMark))

Locate the three errors, and suggest how the coding should be corrected. [6]

Error 1

Error 2

Error 3

[Total 20 Marks]