MODULE O ROBUST PROGRAMS · O8

Planning tests with test data

Original practice questions · 22 marks · ~25 minutes · Cambridge 0478 syllabus 7.6 (with 7.1, 7.8)

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. All algorithms are written in Cambridge pseudocode. Use the Cambridge names for types of test data: **normal**, **abnormal**, **extreme** and **boundary**. Write actual values as test data, not descriptions. The marks for each part are shown in brackets [ ]. The total for this worksheet is **22 marks**.

1

Total: 4 marks

A coach company's booking program accepts the number of passengers for a trip. Only whole numbers from 10 to 40 inclusive are accepted.

Tick (✓) **one or more** boxes in each row to show the type(s) of test data that each value is, for this check. **[4]**

Test data	Normal	Abnormal	Extreme	Boundary
25				
40				
9				
forty				

2

Total: 5 marks

A garage's tyre-pressure program accepts a pressure, in psi, as a whole number from 20 to 45 inclusive. Any other input is rejected with the message `Pressure out of range` and the pressure is input again.

Complete the table of test data for this check. **[5]**

Test	Test data	Type of test data	Expected outcome
1	32	Normal	Accepted
2		Extreme	Accepted
3	46		Rejected, `Pressure out of range`
4	..... and	Boundary	
5		Abnormal	Rejected, `Pressure out of range`

3

Total: 3 marks

A ferry company uses this algorithm to work out the fare for a vehicle from its length in metres. Lengths have already been validated, so only lengths from 2.0 to 20.0 reach this algorithm.

```
01 INPUT Length
02 IF Length <= 5.0
03   THEN
04     Fare ← 30
05   ELSE
06     IF Length <= 12.0
07       THEN
08         Fare ← 55
09       ELSE
10         Fare ← 90
11     ENDIF
12 ENDIF
13 OUTPUT "Fare is ", Fare
```

Suggest test data that tests each of the three possible fares. Give a different length for each test and the expected output. **[3]**

Test	Test data (Length)	Expected output
1		
2		
3		

4

Total: 6 marks

A restaurant's table-booking algorithm should accept from 1 to 8 seats inclusive. It should keep asking for the number of seats until an acceptable value is input. In the testing stage of the program development life cycle, the program is tested with the test data in the table below.

```
01 REPEAT
02     OUTPUT "Enter number of seats (1 to 8)"
03     INPUT Seats
04 UNTIL Seats > 1 AND Seats <= 8
05 OUTPUT "Booking for ", Seats, " seats"
```

(a) Apply the test data to the algorithm. Complete the **Actual outcome** column for tests 2, 3 and 4. Test 1 has been done for you. **[3]**

Test	Test data	Type	Expected outcome	Actual outcome
1	4	Normal	Accepted	Accepted
2	1	Extreme	Accepted	
3	9	Abnormal	Rejected, asked again	
4	8	Extreme	Accepted	

(b) Identify the line number of the error in the algorithm and suggest a correction. **[2]**

Line number

Correction

(c) Explain why test 1 did **not** find the error. **[1]**

5

Total: 4 marks

A craft website's sign-up program has a length check on passwords: a password must be from 8 to 20 characters long (inclusive). A programmer chose this test data for the length check.

Test	Test data	Type	Expected outcome
1	`sunflower12` (11 characters)	Normal	Accepted
2	`riverbank` (9 characters)	Normal	OK
3	`cat` (3 characters)	Abnormal	Rejected

Identify **two** problems with this choice of test data. For each problem, suggest a change or extra test that would solve it. **[4]**

Problem 1

Change or extra test

Problem 2

Change or extra test

Total for this worksheet: 22 marks