Coursework Task

Higher Computing Coursework Task 2012–2013

Introduction

Calibre Academy's Higher Biology class are going on a field trip. They have been given the task of cataloguing the number of common minibeasts found within one square metre of woodland. To do this, they lay a quadrat over an area of ground, note the coordinates of each minibeast they find and take a close-up digital photograph as evidence.

The class will create a program to store the name and grid position of 6 common minibeasts.

Part 1

The students from Calibre Academy will write a program to store the position of each common minibeast.

The software will

- Allow one of six minibeasts to be selected from a menu.
- Enter and store the name and grid coordinate of the selected minibeast.
- Display how often each minibeast was found.
- Display the minibeasts found at a selected coordinate.

How the program should work

Entering the log data

The user should select the name of each minibeast found from the menu shown below:

1. Slug
2. Centipede
3. Ladybird
4. Snail
5. Woodlouse
6. Worm
7. Exit

Selection is made by entering the relevant number.

Once a minibeast is selected the coordinate of where the minibeast was found should be input and validated.

The data shown below should be entered into the program.

Minibeasts	Coordinates
2	A6
1	D1
6	H7
4	B3
4	A2
3	J2
6	H0
1	B3
1	F9
7	

Displaying how often each minibeast was found

How often each minibeast was found should be displayed as shown below.

Minibeast	Number found
1	3
2	1
3	1
4	2
5	0
6	2

Displaying the minibeast found at a selected coordinate

The user will enter a coordinate (for example B3).

The minibeasts found at the selected coordinate should be displayed as shown below.

```
At coordinate B3 the following minibeasts were found:
1
4
```

Main Algorithm

1. Start Loop
2. Select valid number from menu
3. If number is not 7
4. Enter a valid grid coordinate
5. End if
6. End conditional loop when 7 is chosen
7. Display how many of each minibeast were found
8. Ask user to enter a coordinate and display the minibeasts found at that coordinate

What you have to do:

<table>
<tr><th colspan="2">Tasks</th><th>Evidence required</th><th>Marks</th></tr>
<tr><td>1</td><td>Indicate data flow on the main algorithm.</td><td>Algorithm with data flow.</td><td>2</td></tr>
<tr><td>2</td><td>Refine steps 4, 7, 8.</td><td>Pseudocode for steps</td><td>7</td></tr>
<tr><td>3</td><td>Using a software development environment of your choice, implement the algorithm.
Use separate sub-programs where appropriate.
Use parameter passing where appropriate.</td><td>Listing of implemented program.</td><td>16</td></tr>
<tr><td>4</td><td>Test the program with the data provided.
<table><tr><td>Minibeasts</td><td>Coordinates</td></tr><tr><td>2</td><td>A6</td></tr><tr><td>1</td><td>D1</td></tr><tr><td>6</td><td>H7</td></tr><tr><td>4</td><td>B3</td></tr><tr><td>4</td><td>A2</td></tr><tr><td>3</td><td>J2</td></tr><tr><td>6</td><td>H0</td></tr><tr><td>1</td><td>B3</td></tr><tr><td>1</td><td>F9</td></tr><tr><td>7</td><td></td></tr></table></td><td>Hard copy of results for given test run.</td><td>1</td></tr>
<tr><td>5</td><td>Test the program with your own test data to ensure robustness.</td><td>Hard copy of your test results and report on the robustness of the program.</td><td>2</td></tr>
<tr><td>6</td><td>Evaluate maintainability.</td><td>Brief report on maintainability of program code.</td><td>2</td></tr>
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