Maximum Temperature

Developing an Algorithm

Find Maximum Temperature

- Problem: find max temperature in CSV Data

	A	B	C	D	E	F	G
1	TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	Visibility	Wind
2	12:51 AM	30.9	25	79	30.37	10	Calm
3	1:51 AM	30.9	25	79	79	10	Calm
4	2:51 AM	30.9	26.1	82	30.36	10	Calm
5	3:51 AM	30	26.1	85	30.37	10	Calm
6	4:51 AM	30	27	88	30.37	10	Calm
7	5:51 AM	30.9	26.1	82	30.37	10	Calm
8	6:51 AM	32	25	75	30.38	10	ESE
9	7:51 AM	32	25	75	30.4	10	Calm
10	8:51 AM	34	27	75	30.42	10	South
11	9:51 AM	39.9	24.1	53	30.44	10	Variable
12	10:51 AM	46	24.1	42	30.4	10	Variable
13	11:51 AM	46.9	21	36	30.37	10	ESE
14	12:51 PM	50	21.9	33	30.33	10	South

Step 1: Work an Example

- Work small example by hand

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

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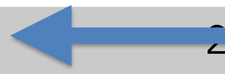

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Step 1: Work an Example

- Work small example by hand

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
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6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this
  1. **Looked at first row, “TemperatureF” column**

Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this
  1. **Looked at first row, “TemperatureF” column**
  2. **Noted that first row has largest so far**

Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this
  3. **Looked at second row, “TemperatureF” column**
  4. **30 degrees was not larger than largest so far (30)**

Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this
  5. **Looked at third row, "TemperatureF" column**
  6. **30.9 degrees was larger than largest so far (30)**

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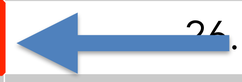
Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South



- Write down step-by-step how you did this
  5. **Looked at third row, “TemperatureF” column**
  6. **30.9 degrees was larger than largest so far (30)**
  7. **Updated largest so far to 3rd row**

Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this
  8. **Looked at fourth row, "TemperatureF" column**
  9. **32 degrees was larger than largest so far (30.9)**

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Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this
  8. **Looked at fourth row, "TemperatureF" column**
  9. **32 degrees was larger than largest so far (30.9)**
  10. **Updated largest so far to 4th row**

Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this
  11. **Looked at fifth row, “TemperatureF” column**
  12. **32 degrees was not larger than largest so far (32)**

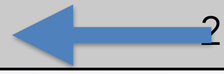
Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this
  13. **Looked at sixth row, "TemperatureF" column**
  14. **34 degrees was larger than largest so far (32)**

Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South



- Write down step-by-step how you did this
  13. **Looked at sixth row, “TemperatureF” column**
  14. **34 degrees was larger than largest so far (32)**
  15. **Updated largest so far to 6th row**

Step 2: Write Down What You Just Did

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
3:51 AM	30	26.1	85	30.37	10	Calm
4:51 AM	30	27	88	30.37	10	Calm
5:51 AM	30.9	26.1	82	30.37	10	Calm
6:51 AM	32	25	75	30.38	10	ESE
7:51 AM	32	25	74	30.4	10	Calm
8:51 AM	34	27	75	30.42	10	South

- Write down step-by-step how you did this

13. **Looked at sixth row, “TemperatureF” column**
14. **34 degrees was larger than largest so far (32)**
15. **Updated largest so far to 6th row**
16. **The 6th row was our answer**

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Step 2: Write Down What You Just Did

1. Looked at first row, “TemperatureF” column
2. Noted that first row has largest so far
3. Looked at second row, “TemperateF” column
4. 30 degrees was not larger than largest so far (30)
5. Looked at third row, “TemperatureF” column
6. 30.9 degrees was larger than largest so far (30)
7. Updated largest so far to 3rd row
8. Looked at fourth row, “TemperatureF” column
9. 32 degrees was larger than largest so far (30.9)
10. Updated largest so far to 4th row
11. Looked at fifth row, “TemperatureF” column
12. 32 degrees was not larger than largest so far (32)
13. Looked at sixth row, “TemperatureF” column
14. 34 degrees was larger than largest so far (32)
15. Updated largest so far to 6th row
16. The 6th row was our answer

Step 3: Find Patterns and Generalize

1. Looked at first row, “TemperatureF” column
2. Noted that first row has largest so far
3. Looked at second row, “TemperateF” column
4. 30 degrees was not larger than largest so far (30)
5. Looked at third row, “TemperatureF” column
6. 30.9 degrees was larger than largest so far (30)
7. Updated largest so far to 3rd row
8. Looked at fourth row, “TemperatureF” column
9. 32 degrees was larger than largest so far (30.9)
10. Updated largest so far to 4th row
11. Looked at fifth row, “TemperatureF” column
12. 32 degrees was not larger than largest so far (32)
13. Looked at sixth row, “TemperatureF” column
14. 34 degrees was larger than largest so far (32)
15. Updated largest so far to 6th row
16. The 6th row was our answer

Step 3: Find Patterns and Generalize

1. Looked at first row, “TemperatureF” column
2. Noted that first row has largest so far
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4. 30 degrees was not larger than largest so far (30)
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6. 30.9 degrees was larger than largest so far (30)
7. Updated largest so far to 3rd row
8. Looked at fourth row, “TemperatureF” column
9. 32 degrees was larger than largest so far (30.9)
10. Updated largest so far to 4th row
11. Looked at fifth row, “TemperatureF” column
12. 32 degrees was not larger than largest so far (32)
13. Looked at sixth row, “TemperatureF” column
14. 34 degrees was larger than largest so far (32)
15. Updated largest so far to 6th row
16. The 6th row was our answer

Step 3: Find Patterns and Generalize

1. Looked at first row, “TemperatureF” column
2. Noted that first row has largest so far
3. Looked at second row, “TemperateF” column
4. 30 degrees was not larger than largest so far (30)
5. Looked at third row, “TemperatureF” column
6. 30.9 degrees was larger than largest so far (30)
7. Updated largest so far to 3rd row
8. Looked at fourth row, “TemperatureF” column
9. 32 degrees was larger than largest so far (30.9)
10. Updated largest so far to 4th row
11. Looked at fifth row, “TemperatureF” column
12. 32 degrees was not larger than largest so far (32)
13. Looked at sixth row, “TemperatureF” column
14. 34 degrees was larger than largest so far (32)
15. Updated largest so far to 6th row
16. The 6th row was our answer

Step 3: Find Patterns and Generalize

- If the largest so far is *nothing*
  - The current row is largest so far
- Otherwise
  - If current row's temp > largest so far's temp
    - current row is largest so far

Step 3: Find Patterns and Generalize

0. Start with largestSoFar as nothing
1. For each row (currentRow) in the CSV File
    a. If largestSoFar is nothing
        i. Update largestSoFar to be currentRow
    b. Otherwise
        i. Check if currentRow's temperature > largestSoFar's
            I. If so update largestSoFar to currentRow
2. The 6th row was our answer

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        i. Update largestSoFar to be currentRow
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2. The 6th row was our answer

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    a. If largestSoFar is nothing
        i. Update largestSoFar to be currentRow
    b. Otherwise
        i. Check if currentRow's temperature > largestSoFar's
            I. If so update largestSoFar to currentRow
2. The largestSoFar is the answer

Step 4: Test the Algorithm

TimeEST	TemperatureF	Dew PointF	Humidity	Sea Level Press	VisibilityMP	Wind Direction
1:51 AM	70	69.1	97	30.13	10	Calm
2:05 AM	69.8	69.8	100	30.14	1	Calm
2:34 AM	71.6	69.8	94	30.14	0.2	SW
2:51 AM	71.1	70	96	30.13	0.8	WSW

0. Start with largestSoFar as nothing
1. For each row (currentRow) in the CSV File
    a. If largestSoFar is nothing
        i. Update largestSoFar to be currentRow
    b. Otherwise
        i. Check if currentRow's temperature > largestSoFar's
            I. If so update largestSoFar to currentRow
2. The largestSoFar is the answer

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