Questions 2-7

Question 2

1/1 point (graded)

Design the function `has-path?` that consumes a `BinaryTree` and a `Path`. The function should produce `true` if following the path through the tree leads to a node. If the path leads to `false` or runs into `false` before reaching the end of the path, the function should produce `false`.

```
;; BinaryTree Path -> Boolean
;; prodcue true if following p through bt leads to a node; false otherwise
```

Lets design a cross product of type comments table to help us write tests for this function. Note `Nat`, `Str` and `BT` stand for `Natural`, `String` and `BinaryTree`.

```
   p        bt   | false | (make-node Nat Str BT BT)
----------------|-------|--------------------------
empty           |       |
----------------|-------|--------------------------
(cons "L" Path) |       |
----------------|-------|--------------------------
(cons "R" Path) |       |
```

Recall:

```
(define BT1 (make-node 1 "a" false false))
(define BT4 (make-node 4 "d"
                       (make-node 2 "b")
                                  (make-node 1 "a" false false)
                                  (make-node 3 "c" false false))
                       (make-node 5 "e" false false)))
```

We need at least one `check-expect for every cell in the table`.

What is the value of each `check-expcet`?

```
(check-expect (has-path? false empty) _____ )
```

false ✔ **Answer:** false

Explanation
`has-path?` should produce false if the path leads to a `false` binary tree. Here the path ends at `false`.

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Answers are displayed within the problem

Question 3

1/1 point (graded)

```
(check-expect (has-path? false (list "L")) _____ )
```

false ✔ **Answer:** false

Explanation
`has-path?` should produce false if the path leads to a `false` binary tree. Here the path hits `false` before it ends.

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Question 4

1/1 point (graded)

```
(check-expect (has-path? false (list "R")) _____ )
```

false ✔ **Answer:** false

Explanation
`has-path?` should produce false if the path leads to a `false` binary tree. Here the path hits `false` before it ends.

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Question 5

1/1 point (graded)

```
(check-expect (has-path? BT1 empty) _____ )
```

true ✔ **Answer:** true

Explanation
`has-path` should produce `true` if the path leads to a node.

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Answers are displayed within the problem

Question 6

1/1 point (graded)

```
(check-expect (has-path? BT4 (list "R")) _____ )
```

true ✔ **Answer:** true

Explanation
Following the given path leads to a node.

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Answers are displayed within the problem

Question 7

1/1 point (graded)

```
(check-expect (has-path? BT4 (list "L" "L" "R")) _____ )
```

false ✔ **Answer:** false

Explanation
Following the given path leads to `false`.

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Answers are displayed within the problem