

# CS5010 - Problem Set 08 - Test Results

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This test suite tests your implementation of Problem Set 08

## 1 File: robot.rkt

Tests your implementation of robot

### 1.1 Test-Group: Simple cases (3 Points)

#### 1.1.1 Test (equality, 1/2 partial points)

The robot is already at the target

Input:

```
(path '(1 1) '(1 1) empty)
```

Expected Output:

```
empty
```

Expected Output Value:

```
()
```

Correct

#### 1.1.2 Test (predicate, 1/2 partial points)

Simple move towards south west

Input:

```
(path '(1 1) '(10 10) empty)
```

Output should match:

```
(check-moves '(1 1) '(10 10))
```

Correct

### 1.1.3 Test (predicate, 1/2 partial points)

Simple move towards north east

Input:

```
(path '(10 10) '(1 1) empty)
```

Output should match:

```
(check-moves '(10 10) '(1 1))
```

Correct

### 1.1.4 Test (equality, 1/2 partial points)

Obstacle on target

Input:

```
(path '(1 1) '(10 10) '((10 10)))
```

Expected Output:

```
false
```

Expected Output Value:

```
#f
```

Correct

### 1.1.5 Test (equality, 1/2 partial points)

Cannot move from start

Input:

```
(path '(1 1) '(10 10) '((2 1) (1 2)))
```

Expected Output:

```
false
```

Expected Output Value:

```
#f
```

Correct

1/1

## 1.2 Test-Group: Simple movement where path exists given normal obstacles (1 Points)

Common Definitions

```
(define VERTICAL-WALL '((2 1) (2 2) (2 3)))

(define HORIZONTAL-WALL '((1 3) (2 3) (3 3) (4 3) (5 3) (6 3) (7 3)))
```

### 1.2.1 Test (predicate)

Move east with straight wall in between

Input:

```
(path '(1 1) '(4 1) VERTICAL-WALL)
```

Output should match:

```
(check-moves '(1 1) '(4 1))
```

Correct

### 1.2.2 Test (predicate)

Move south west with horizontal wall below

Input:

```
(path '(1 1) '(5 5) HORIZONTAL-WALL)
```

Output should match:

```
(check-moves '(1 1) '(5 5))
```

Correct

## 1.3 Test-Group: Movement through a maze (2 Points)

Common Definitions

```
(define MAZE
  '((3 1)
    (3 2)
    (3 3)
    (3 4)
    (5 4)
    (5 3)
    (5 2)
    (5 5))
```

2/2

```

(5 6)
(5 7)
(6 7)
(7 7)
(7 6)
(7 5)
(7 4)
(7 3)
(7 2)
(7 1)))

```

```

(define CROSS-WALL
'((4 2)
  (4 3)
  (4 4)
  (4 5)
  (4 6)
  (4 7)
  (2 4)
  (3 4)
  (5 4)
  (6 4)
  (7 4)
  (8 4)))

```

### 1.3.1 Test (predicate, 1 partial points)

Move through a maze

Input:

```
(path '(1 1) '(6 4) MAZE)
```

Output should match:

```
(check-moves '(1 1) '(6 4))
```

Correct

### 1.3.2 Test (predicate, 1 partial points)

Move around cross to opposite side

Input:

```
(path '(3 5) '(5 3) CROSS-WALL)
```

Output should match:

```
(check-moves '(3 5) '(5 3))
```

Correct

## 1.4 Test-Group: Unreachable due to blocked off obstacles (1 Points)

Common Definitions

```
(define BOX
'((4 4)
  (5 4)
  (6 4)
  (7 4)
  (8 4)
  (8 5)
  (8 6)
  (8 7)
  (8 8)
  (8 9)
  (7 9)
  (6 9)
  (5 9)
  (4 9)
  (4 8)
  (4 7)
  (4 6)
  (4 5)))
```

### 1.4.1 Test (equality, 1 partial points)

No path to a target which is blocked off

Input:

```
(path '(1 1) '(6 6) BOX)
```

Expected Output:

```
false
```

Expected Output Value:

```
#f
```

Correct

## 2 File: obstacles.rkt

Tests your implementation of blocks-to-obstacles

## 2.1 Test-Group: (8 Points)

### 2.1.1 Test (equality, 1/2 partial points)

Two equal PositionSets

Input:

```
(position-set-equal?
 '((1 3) (2 7) (99 152) (31 1000))
 '((31 1000) (2 7) (1 3) (99 152)))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

### 2.1.2 Test (equality, 1/2 partial points)

Normal obstacle

Input:

```
(obstacle? '((1 2) (2 3) (1 4) (2 5)))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

### 2.1.3 Test (equality, 1/2 partial points)

Larger obstacle

Input:

```
(obstacle? '((1 1) (2 2) (3 3) (2 4) (3 5) (2 6) (3 7) (4 8)))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

#### 2.1.4 Test (equality, 1/2 partial points)

Single block is an obstacle.

Input:

```
(obstacle? '((1 1)))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

#### 2.1.5 Test (equality, 1/2 partial points)

Two single block obstacles sharing a corner should be an obstacle

Input:

```
(obstacle? '((2 3) (3 2)))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

#### 2.1.6 Test (equality, 1/2 partial points)

Two obstacles sharing an edge should not be an obstacle

Input:

```
(obstacle? '((1 3) (2 4) (3 4) (4 5)))
```

Expected Output:

```
false
```

Expected Output Value:

```
#f
```

Correct

### 2.1.7 Test (equality, 1/2 partial points)

Single obstacle

Input:

```
(set-equal? (blocks-to-obstacles '((1 1))) '(((1 1))))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

### 2.1.8 Test (equality, 1/2 partial points)

One obstacle

Input:

```
(set-equal? (blocks-to-obstacles '((2 1) (1 2))) '(((1 2)) ((2 1))))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

### 2.1.9 Test (equality, 1 partial points)

Side by side blocks do not comprise an obstacle

Input:

```
(set-equal?  
(blocks-to-obstacles '((1 1) (1 2) (1 3) (2 5) (3 5) (4 5)))  
'(((1 1)) ((1 2)) ((1 3)) ((2 5)) ((3 5)) ((4 5))))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct



### 2.1.10 Test (equality, 1 partial points)

Contains multiple obstacles.

Input:

```
(set-equal?
(blocks-to-obstacles '((1 2) (1 3) (2 3) (3 2) (3 4) (4 1) (4 4)))
'(((1 2) (2 3) (3 4) (3 2) (4 1)) ((1 3)) ((4 4))))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

### 2.1.11 Test (equality, 1 partial points)

One big obstacle

Input:

```
(set-equal?
(blocks-to-obstacles
'((1 1)
(2 2)
(3 3)
(4 4)
(1 3)
(2 4)
(3 1)
(4 2)
(5 3)
(5 1)
(6 2)))
'(((1 1)
(2 2)
(3 3)
(4 4)
(1 3)
(2 4)
(3 1)
(4 2)
(5 3)
(5 1)
(6 2))))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

### 2.1.12 Test (equality, 1/2 partial points)

Big obstacle

Input:

```
(set-equal?
(blocks-to-obstacles
'((1 1) (2 2) (1 3) (2 4) (1 5) (2 6) (1 7) (3 3) (4 4) (3 5)))
'(((1 1) (2 2) (1 3) (2 4) (1 5) (2 6) (1 7) (3 3) (4 4) (3 5))))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

### 2.1.13 Test (equality, 1/2 partial points)

Obstacle at a distance

Input:

```
(set-equal?
(blocks-to-obstacles '((1 1000000) (2 1000001) (1000000 1000000)))
'(((1 1000000) (2 1000001)) ((1000000 1000000))))
```

Expected Output:

```
true
```

Expected Output Value:

```
#t
```

Correct

### **3 Results**

Successes: 23

Wrong Outputs: 0

Errors: 0

Achieved Points: 15

Total Points (rounded): 15/15