

# CS 571

## Quiz 3

**Oct 10**  
**15 points**

**Closed book**  
**Closed notes**

**Important Reminder:** As per the course Academic Honesty Statement, cheating of any kind will minimally result in receiving an F letter grade for the entire course.

**Please ensure that you have filled-in BOTH your name and B-number in the bubbles on the provided grid-sheet.**

For each of the following questions, select a **single** alternative on the grid-sheet.

There are 7 questions with 2-points per question; there is 1-point for submitting the quiz.

1. Which of the following languages over the vocabulary of square-brackets  $\{[, ]\}$  is not expressible using standard regular expressions?
  - (a) Strings of even length. Examples include the empty string,  $] [$ ,  $[[[]]$  and  $[[]]$ .
  - (b) Strings of even length which consist of balanced brackets. Examples include the empty string,  $[]$  and  $[] [[]]$ .
  - (c) Strings of even length containing 2-or-more  $]$ 's followed by 0-or-more  $[$ 's. Examples include  $]]$ ,  $]]][$  and  $]] [[$ .
  - (d) Strings of length less-than-or-equal-to 4 which consist of balanced brackets. Examples include the empty string,  $[]$  and  $[] []$ .
  - (e) Strings whose length is exactly 4. Examples include  $]] [[$ ,  $[[[]]$  and  $[] []$ .

2. In Javascript, *hoisting* refers to:
- (a) Moving `let` declarations to the start of a block.
  - (b) Moving `let` declarations to the start of a function.
  - (c) Moving `var` declarations to the start of a block.
  - (d) Moving `var` declarations to the start of a function.
  - (e) Moving `var` declarations to the `window` object.
3. What should be the value of the following Scheme expression?

```
(length '( 1 (2 3) () () (()) ))
```

- (a) It will result in an error since the list is not a proper list.
- (b) 3
- (c) 4
- (d) 5
- (e) 6

4. Which of the following is the most accurate characterization of the semantics of `cons`, `car` and `cdr` in Scheme?
- (a) `cons` constructs a list, `car` returns the head of the list, `cdr` returns the tail of the list.
  - (b) `cons` constructs a list, `car` returns the tail of the list, `cdr` returns the head of the list.
  - (c) `cons` constructs a pair, `car` returns the first element of the pair, `cdr` returns the second element of the pair.
  - (d) `cons` constructs a list, `car` returns the first element of the list and `cdr` returns the second element of the list.
  - (e) `cons` constructs a pair, `car` returns the second element of the pair, `cdr` returns the first element of the pair.
5. What should be the value of the following Scheme expression?

`(caddr ' (a b c d e))`

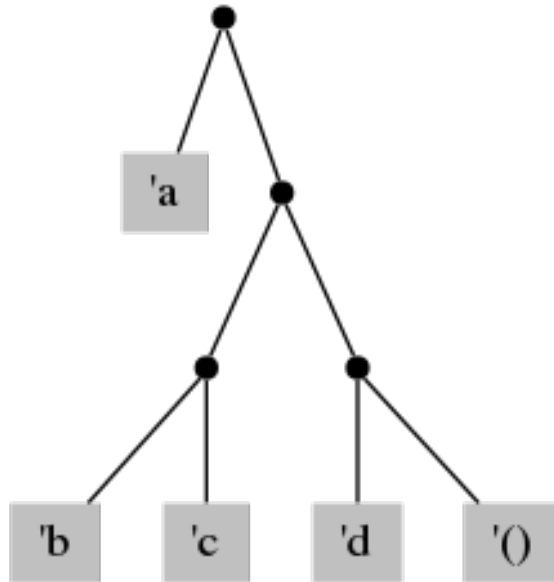
- (a) `'b`.
- (b) `'c`.
- (c) `'d`.
- (d) `'(c d e)`
- (e) `'(d e)`

6. What should be the value of the following Scheme expression?

```
(cdddr '(a b c d e))
```

- (a) 'b.
- (b) 'c.
- (c) 'd.
- (d) '(c d e)
- (e) '(d e)

7. Given the following tree structure:



which of the following Scheme expressions best describes the structure?

- (a) '(a b c d)
- (b) '(a (b c) d)
- (c) '(a (b . c) d)
- (d) '(a (b c) (d ()))
- (e) '(a (b c) (d . ()))