

Extra Practice Problems (Module 3)

1. Write a function (`middle a b c`) that produces the middle value from three values a , b , and c . (this is similar to *middle* from assignment 2, but should **use conditional statements**)

Example:

- `(middle 4.5 0 -2) => 0`

2. Write a function (`sorted? a b c`) that produces `true` if the three unique values a , b , and c are in ascending **or** descending order, otherwise the function produces `false`.

Examples:

- `(sorted? -4 10.5 15) => true`
- `(sorted? 20 5 0) => true`

3. Write a function (`switch2 st p1 p2`) that switches the character of the consumed string, `st`, at index position `p1` with the character at position `p2`. The parameters `p1` and `p2` are natural numbers less than the length of `st`, and `p1` is less than `p2`.

Examples:

- `(switch2 "hello" 0 4) => "oellh"`
- `(switch2 "abcde" 2 3) => "abdce"`

4. Write a function (`grade-level grade bonus`) that consumes a number, `grade`, between 0-100 and `bonus`, and produces the string "A" if the grade with the bonus added is at least 80, "B" if it is between 70 and 79, "C" if it is between 60-69, "D" if it is between 50-59, and "F" if it is less than 50.

Examples:

- `(grade-level 47 3) => "D"`
- `(grade-level 100 3) => "A"`

5. A leap year is a year that is exactly divisible by four, except for years that are exactly divisible by 100, unless it is also divisible by 400. Write a function (`leap-year? year`) that determines whether year is a leap year.

Examples:

- `(leap-year? 2004) => true`
- `(leap-year? 2001) => false`
- `(leap-year? 1800) => false`

6. Write a function (`determine-datatype data`) that produces "Str" if `data` is a string, "Bool" if `data` is a Boolean value, "Int" if `data` is an integer and "Unknown" otherwise.

Examples:

- `(determine-datatype "abc") => "Str"`
- `(determine-datatype false) => "Bool"`
- `(determine-datatype 115) => "Int"`
- `(determine-datatype 11.5) => "Unknown"`

7. Write a function (`even?-fun x`) that behaves like the DrRacket predicate function `even?`. You may NOT use `even?`. In your solution.

8. Write a function (`which-card? level suit`) that consumes a natural number between 0 and 13 inclusive (`level`), and a string (`suit`), which is one of the values `"clubs"`, `"diamonds"`, `"hearts"`, `"spades"` or `"Wild Card"`, and produces a string as shown in the examples below.

Examples:

- (`which-card? 2 "hearts"`) => `"2 of hearts"`
- (`which-card? 10 "spades"`) => `"10 of spades"`
- (`which-card? 0 "Wild Card"`) => `"Wild Card"`

Additional Information and examples

If:

`level = 1 then, (which-card? 1 "clubs") => "Ace of clubs"`

`level = 11 then, (which-card? 11 "diamonds") => "Jack of diamonds"`

`level = 12 then, (which-card? 12 "spades") => "Queen of spades"`

`level = 13 then, (which-card? 13 "hearts") => "King of hearts"`

9. Solve Lab 03 Q6 (part b) using `cond`. And if you previously solved this question using `cond`, try to do it without `cond`.

10 Redo pad3 (Q8 from Module 2 Extra Practice Problems) using `cond`