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