Homework 1 - Design Writeup

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1 Sequential

1.1 InputScanner

Properties:

- `public int verticies`
- `private int width`
- `private int height`
- `private int max_dist`
- `private int inf_dist`

Invariants: `height <= width == verticies`

Methods:

- `public InputScanner* init(InputScanner *self)`
  Given a valid pointer to an InputScanner, initialize the object.
- `public Graph read_file(InputScanner *self, file *f)`
  Read a text file representing a graph in distance-matrix format. Return a new Graph object with "unknown" cells initialized to `inf_dist` and all "known" `cells <= max_dist`.

  Preconditions: `f` is a valid file handle.
  Postconditions: `self.vertices == self.width == self.height`
- `private int* read_line(InputScanner *self, file *f)`
  Read a line of the input file and return a list of `int`s representing a row of the new array. If EOF has been reached, return `NULL`. If `self->verticies` has not yet been set, then set it to the length of the array to be returned.

  Preconditions: `f` is a valid file handle.
  Postconditions: `(rv == NULL) || (length(rv) == self->verticies) || (self->vertices == 0)`