luFactor.m

This function uses LU decomposition to manipulate the `A` input matrix into an output `L` `U` and `P` matrices.
Within MATLAB *(or Octave)* this function can be called upon using `[L,U,P] = luFactor(A)`.

Inputs

- `A` - The input matrix

Outputs

- `L` - The lower triangular matrix. Stores values used to modify the `A` matrix
- `U` - The upper triangular matrix. Is the final product of LU factorization
- `P` - The permutation matrix. Stores information on row pivoting

Useful Knowledge

- The outputs should be useful in calculating the `x` matrix if you are solving the matrix equation `[A]*{x}={b}`.
- Using the outputs of this function can be checked using `[P]*[A]=[L]*[U]` *(this should be true)*.

Limitations

The built-in MATLAB `lu` function will likely be more accurate and work in more cases. `luFactor` occasionally fails when it runs into very small numbers in the `A` or `L` matrices.