DPRL Assignment 2

- Implement the following exercise in python using standard functions (no MDC packages)
- Consider a system that slowly deteriorates over time:
  - When it is new it has a failure probability of 0.1
  - the probability of failure increases every time unit linearly with 0.01
  - Replacement costs are 1, after replacement the part is new
- Compute the stationary distribution and use this to find the long-run average replacement costs
- Solve the average-cost Poisson equation
- Preventive replacement is possible at cost 0.5. What is the average optimal policy? Solve it using:
  - policy iteration
  - value iteration

How and what to submit

- Report (.pdf) of max 2 A4 pages plus appendix with relevant figures/tables/screenshots OR max 1000 words

- Separate Python code file (.py) or jupyter notebook

- Implement the algorithm in an efficient way, it should run very fast

- Report should include the solution method. Mathematically describe the method that you coded, including implementation choices and initialization and stopping criteria of the method

- Comment on your findings, are they as expected?