DPRL Assignment week 1

Consider the following airline RM problem:

- f = (500,300,200), C = 100, T = 600
- $\lambda_t(i) = \mu_i e^{\nu_i t}$ with μ=(0.001,0.015,0.05) and ν=(0.01,0.005,0.0025)

a) Determine the total expected revenue and the optimal policy by implementing dynamic programming yourself in python

b) Makes a plot of the policy (with time and capacity on the axes)

c) Simulate the demand over time, and for this realization determine which tickets are sold, what the remaining capacity is and what the prices are at each moment

d) Repeat a & c but now for the model where the price cannot go down. What is the difference in expected revenue?

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How and what to submit:

- Report (.pdf) of max 2 A4 pages plus appendix with relevant figures/tables/screenshots
- Separate Python code file (.py)
- 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?