Introduction to Assignment 2 and Debugger

TSFS03 Lesson

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April 6, 2020

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Hand-in 2 Introduction

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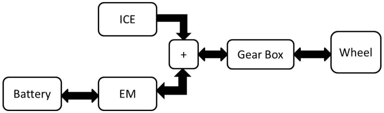

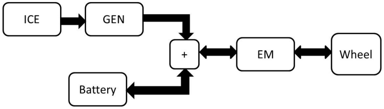

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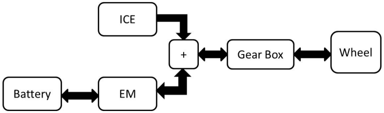

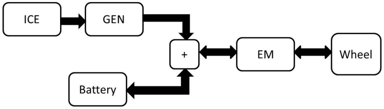

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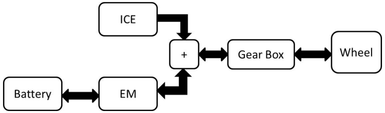

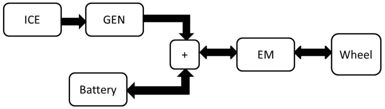

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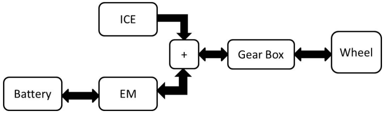

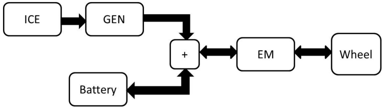

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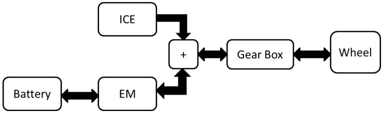

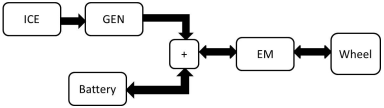

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Hand-in Goals:

- Acquire knowledge and experience with DDP.
- Acquire knowledge about the properties and differences between parallel and series architectures.

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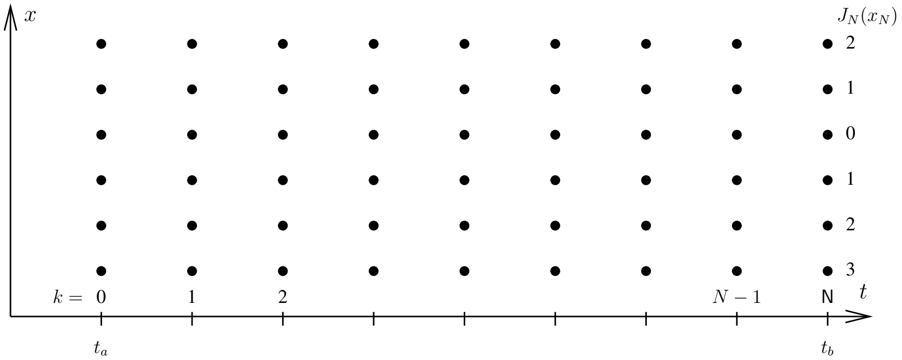
DDP Example

Graphical illustration of the solution procedure



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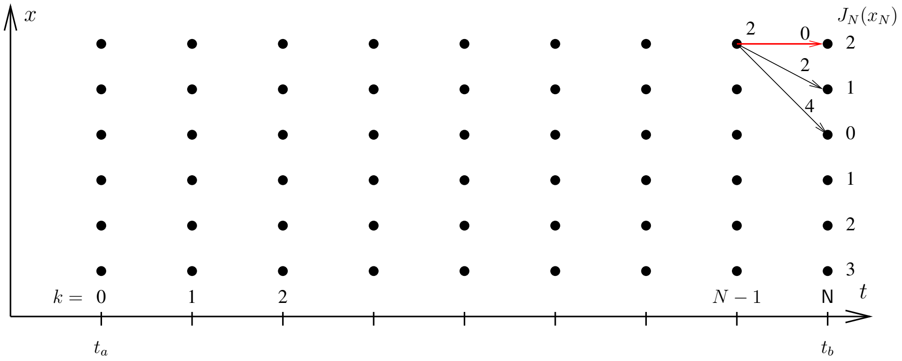

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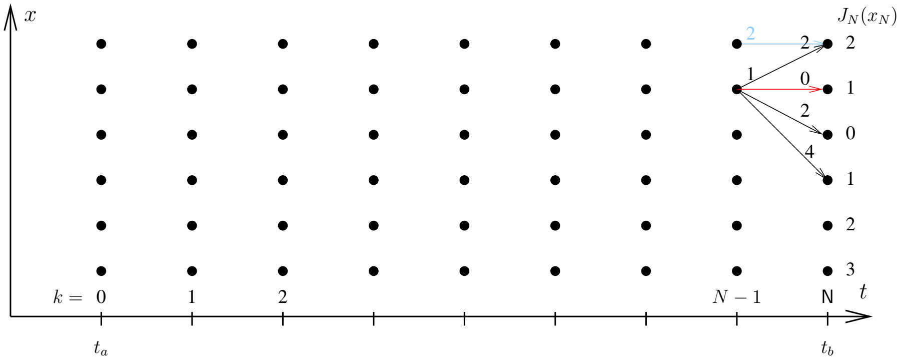

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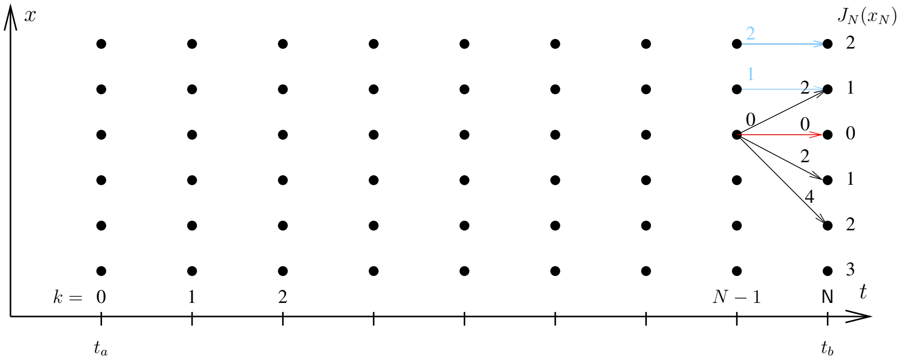

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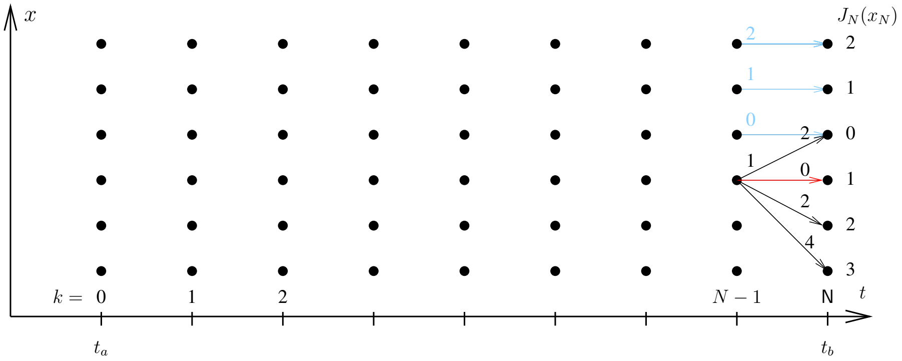

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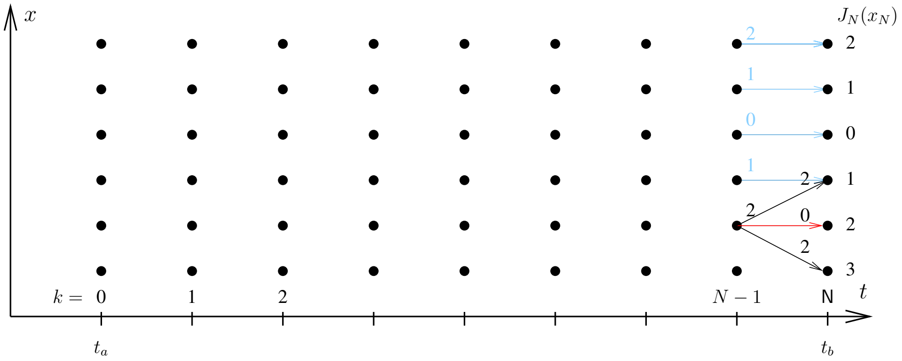

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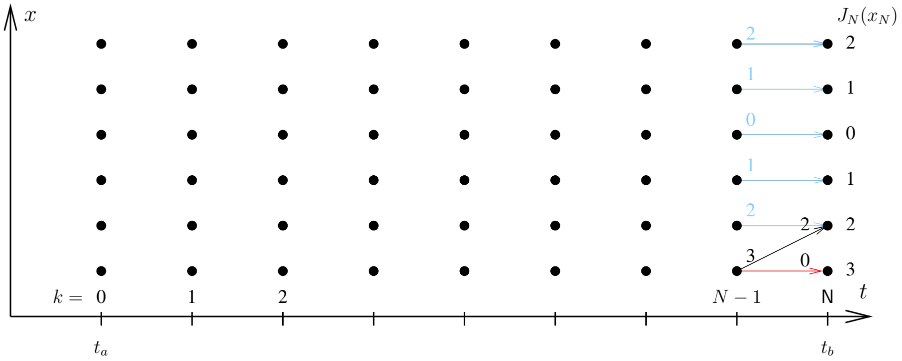

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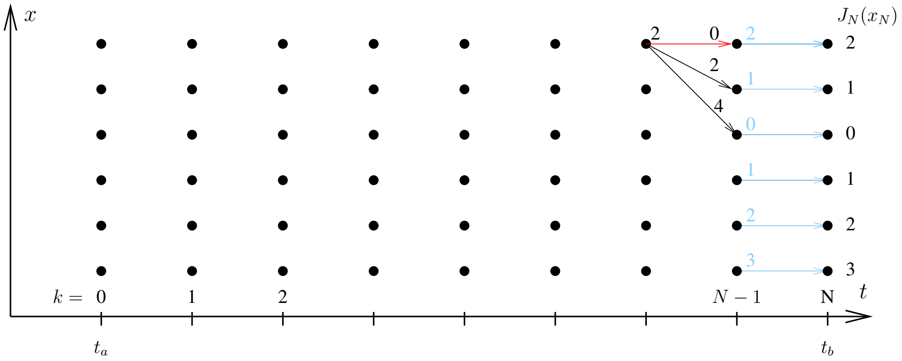

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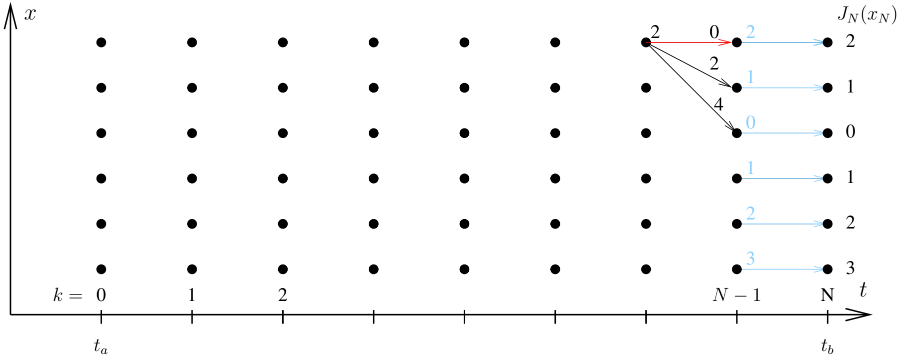

Matrix formulation benefits:

Each iteration compute all arcs using a vector/matrix

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Algorithm Implementation

Generic DDP functions:

- `dynProg1D.m` – Solves a dynamic programming problem in one variable
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Problem specific scripts and functions that you need to complete:

- `testHybrids.m` – Template for setting up the problem
- `parallelHybrid.m` – Template for the parallel hybrid vehicle
- `seriesHybrid.m` – Template for the series hybrid vehicle

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- Trick: $P = T \quad {}^{sign(T)}$

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Be cautious to not overwrite variables $\rightarrow$ Read only variables.

Solution Postprocess

How to retrieve the solution after calculating the `cost_to_go` matrix is not trivial.

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Helpful things to check:

- Start with the parallel hybrid.
- Check what are the outputs from `dynProg1D.m` and `dynProg2D.m`
- How are the costs stored in the DDP algorithm?
- How is the optimal path stored in the DDP algorithm?

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Matlab debugger

- Mouse click to the left in a m-file to add a debugger point. Possible to add conditional debugger point by right click (e.g. stop at a wanted index in a for loop).
- F10: Step forward (one line)
- F11: Step inside called function
- F5: Continue till next debugger point or till the end

Example in Matlab

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- Answer the questions and discuss your results in the Hand-in report.

Thanks for your attention

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