ADS-MIRI Proposal of Homeworks and Final Projects

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The Homeworks and Final Projects are not limited to the following proposals and or topics. Feel free to choose any other topic or data structure of your interest. In the case of the final Project do so with the agreement of ADS' coordinator.

Homeworks

A homework is a written document that includes:

- a short description of the data structure under study,

- its main features, an implementation of the data structure,

- the design of an experiment to show one of the features of the data structure

- a report of the results of executing the proposed experiment and

- some personal observations and or conclusions.

Proposals:

- Show experimentally that the expected height of a randomly built binary search tree of n nodes is $\Theta(\log n)$.

- Red-Black trees

- Tim sort and Introspective sort

- k-d tries or quad tries.

- Segment trees.

- Priority search trees.

- Kinetic heap.

- Bisector trees.

- B trees.

Final Projects

- Deletion in quad trees.

- Applications of octrees in computer graphics.

- Sweep lines.

- Fractional Cascading.

- The van Emde Boas Layout.

- Cache oblivious B trees.

- Succint data structures.