5118006-03 Data Structures

Homework 5.
Heap

25 May 2024

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Outline

- Due date: 7 PM, June 4 Tue

- Task
  - extend a given Heap implementation

- Submission: via LMS
  - source code files
  - video file (or URL)

- Evaluation
  - test (50%)
  - source code quality (30%)
  - video presentation (20%)

Tasks (1/2)

- Extend the given heap implementation by completing the following three tasks
  - https://github.com/hongshin/DataStructures/tree/main/assignments/homework5

- Task 1. Adjust heap capacity automatically
  - revise function `heap_push` such that it doubles the capacity when the heap becomes full
  - revise function `heap_pop` such that it halves the capacity when the number of remaining elements becomes less than the quarter of the capacity
  - revise the main function to demonstrate this chance

Tasks (2/2)

- Task 2. Implement `heap_remove`
  - this function removes an element from heap that is equal to the data given as `buf`.
  - two elements are considered to be equal if the `cmp` function returns `0` with the two elements
  - revise the `main` function to demonstrate this function

- Task 3. Complete `main_movie.c`
  - complete `main_movie.c`, which prints out the given movie data in ascending order
  - In this program, a movie A precedes another movie B if A was released before B, or if the title of A lexicographically precedes that of B when they were released at the same month in the same year.

Video Presentation

- Take a 4-min video for demonstrating your program reviewing the source code
  - explain how you address each task
  - each team member must take a part in presentation

- You can upload either one video file, an archive of multiple video files or a file indicating the URL of the video on the web

Remark

- Use of programming tools is not permitted

- No late submission will be accepted

- After submission, peer evaluation will follow

- The team members must work together at all activities for the homework