RV College of Engineering

Title:Memory Management API

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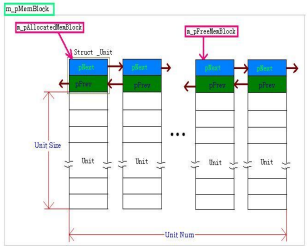
Problem Statement:

The problem entails designing and implementing a memory management API to facilitate users in efficiently utilizing system memory. This API should enable seamless allocation and deallocation of memory while optimizing resource utilization. Additionally, thorough testing using appropriate data structures is essential to validate the functionality and robustness of the API.

Motivation:

- To enable users to easily access and store relevant memory management parameters and compare it with future runs to test memory efficiency.
- To develop functions to handle create, deletion and manipulation of memory pools to enable access of memory minimizing overhead.



Results:

- Memory pools were successfully created.
- Memory data of a process was successfully scraped and recorded for comparison
- Comparison was made between memory pool scheme and regular scheme and the advantages of the memory pool scheme were demonstrated.

```
FREE:
0x60d2b235f6a0-0 0x60d2b235fd60-216 0x60d2b23600c0-324 0x60d2b2360420-432
OCCUPPIED:
0x60d2b235fa00-108

FREE:
0x60d2b235f6a0-0 0x60d2b23600c0-324 0x60d2b2360420-432
OCCUPPIED:
0x60d2b235fa00-108 0x60d2b235fd60-216

normal time: 80905
pool time: 79344
```

References:

Manish PandeyYoung Woo Kwon: Optimizing Memory Allocation in a Serverless Architecture through Function Scheduling

Ben Kenwright: Fast Efficient Fixed-Size Memory Pool: No Loops and No Overhead

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