



# **Seminário de Apresentação - Engenharia de Software**

## **Projeto e Desenvolvimento de Aplicação**

### **Gerenciamento Dinâmico de Memória**

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## Metodologia de desenvolvimento

- Desenvolvimento Incremental
- Métodos Ágeis

## Ferramentas Utilizadas

- **Planejamento das Sprints - Trello**
- **Comunicação - Discord**
- **Editor - VSCode**
  - **Ferramenta - Live Share**
- **Repositório de código - GitHub**
- **Protótipo - Figma**
- **Diagramas - Lucidchart**

## Planejamento

- Diagrama de Sequência - Solução Sequencial/Paralela
- Diagrama UML
- Documentação
- Prototipação da Interface Gráfica

## Requisitos de Sistema

- **Inserção de dados iniciais ao sistema**
  - **Tamanho da Heap**
  - **Número de requisições**
  - **Limite mínimo / máximo de uso de memória**

## Diagrama de Sequência

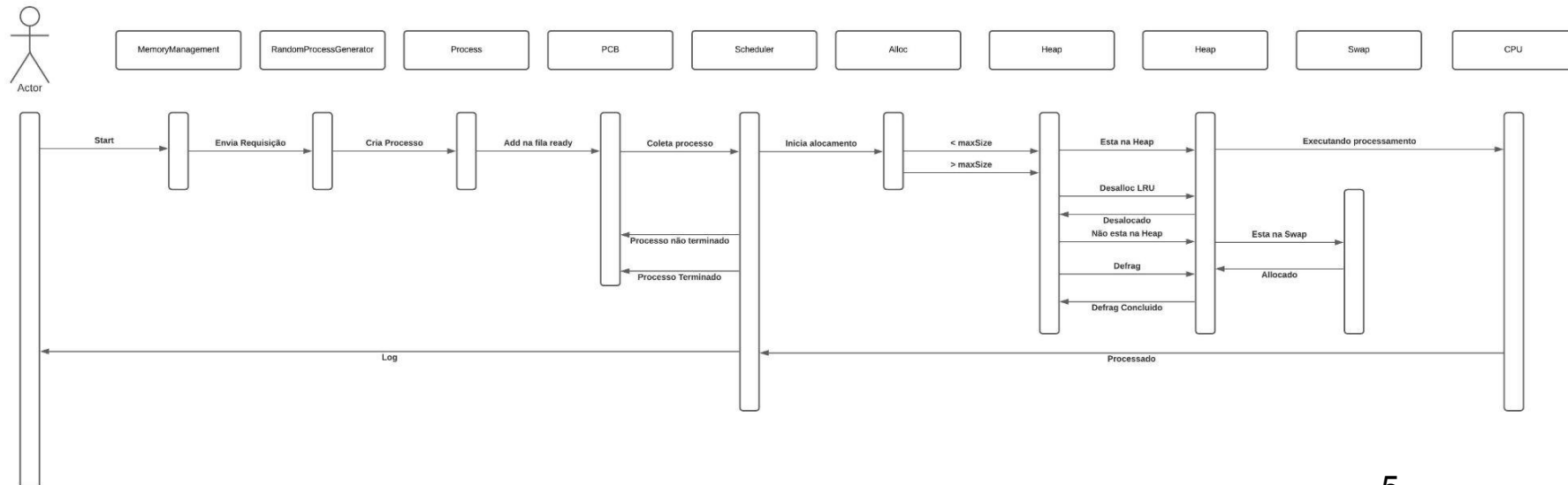
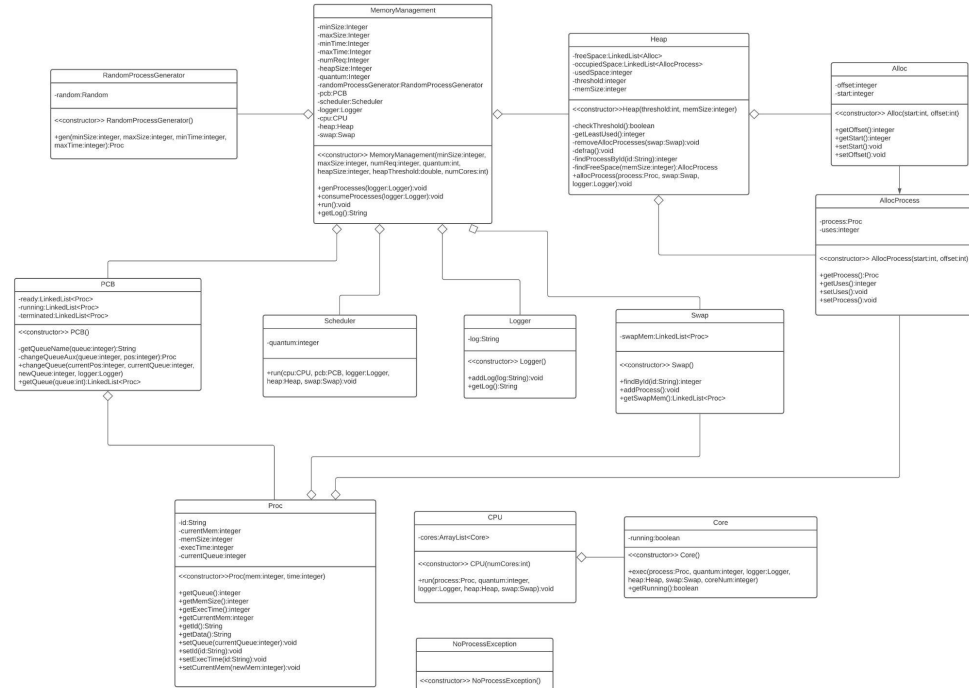


Diagrama UML





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## Prototipação Interface



Nova Simulação

### Parâmetros

Tamanho da Heap	Numero de Cores	Tamanho de Quantum
<input type="text"/>	<input type="text"/>	<input type="text"/>
Quantidade de Requisições	Tempo Maximo de Execução	Limite Superior de Ocupação na Heap
<input type="text"/>	<input type="text"/>	<input type="text"/>
Tamanho Maximo do Processo	Tempo Minimo de Execução	Limite Inferior de Ocupação na Heap
<input type="text"/>	<input type="text"/>	<input type="text"/>
Tamanho Minimo do Processo	Tempo Minimo de Execução	Paralela
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>

Iniciar



Simulação 1

Tamanho de Heap: 256

Quantidade de Requisições: 100

Tamanho Maximo do Processo 20

Tamanho Minimo do Processo: 10

Numero de Cores: 1

Tempo Maximo de Execução: 50

Tempo Minimo de Execução: 10

Tamanho de Quantum: 10

Limite Superior Heap: 60%

Limite Inferior Heap: 20%

Paralela: Não

50%

Tempo de execução: 00:00:08.772

### Log

```
[2021-09-30 22:55:03.336]: ===== STARTED =====
[2021-09-30 22:55:03.341]: CREATED PROCESS: {id: 0, memSize: 6, execTime: 43, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.341]: CREATED PROCESS: {id: 1, memSize: 4, execTime: 31, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.342]: CREATED PROCESS: {id: 2, memSize: 9, execTime: 80, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.342]: CREATED PROCESS: {id: 3, memSize: 1, execTime: 76, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.343]: CREATED PROCESS: {id: 4, memSize: 10, execTime: 104, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.343]: CREATED PROCESS: {id: 5, memSize: 6, execTime: 94, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.344]: CREATED PROCESS: {id: 6, memSize: 4, execTime: 67, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.344]: CREATED PROCESS: {id: 7, memSize: 7, execTime: 98, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.345]: CREATED PROCESS: {id: 8, memSize: 10, execTime: 34, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.345]: CREATED PROCESS: {id: 9, memSize: 6, execTime: 20, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.345]: CREATED PROCESS: {id: 10, memSize: 5, execTime: 115, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.346]: CREATED PROCESS: {id: 11, memSize: 10, execTime: 92, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.346]: CREATED PROCESS: {id: 12, memSize: 10, execTime: 74, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.347]: CREATED PROCESS: {id: 13, memSize: 8, execTime: 54, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.347]: CREATED PROCESS: {id: 14, memSize: 1, execTime: 106, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.348]: CREATED PROCESS: {id: 15, memSize: 4, execTime: 21, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.348]: CREATED PROCESS: {id: 16, memSize: 8, execTime: 54, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.349]: CREATED PROCESS: {id: 17, memSize: 7, execTime: 61, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.349]: CREATED PROCESS: {id: 18, memSize: 6, execTime: 94, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.350]: CREATED PROCESS: {id: 19, memSize: 4, execTime: 27, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.350]: CREATED PROCESS: {id: 20, memSize: 9, execTime: 94, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.350]: CREATED PROCESS: {id: 21, memSize: 4, execTime: 46, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.351]: CREATED PROCESS: {id: 22, memSize: 10, execTime: 57, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.351]: CREATED PROCESS: {id: 23, memSize: 6, execTime: 85, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.352]: CREATED PROCESS: {id: 24, memSize: 5, execTime: 102, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.352]: CREATED PROCESS: {id: 25, memSize: 7, execTime: 41, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.353]: CREATED PROCESS: {id: 26, memSize: 4, execTime: 40, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.353]: CREATED PROCESS: {id: 27, memSize: 1, execTime: 80, currentQueue: 0, currentMem: 0}
[2021-09-30 22:55:03.354]: CREATED PROCESS: {id: 28, memSize: 10, execTime: 21, currentQueue: 0, currentMem: 0}
```

Salvar

Anterior

Próximo







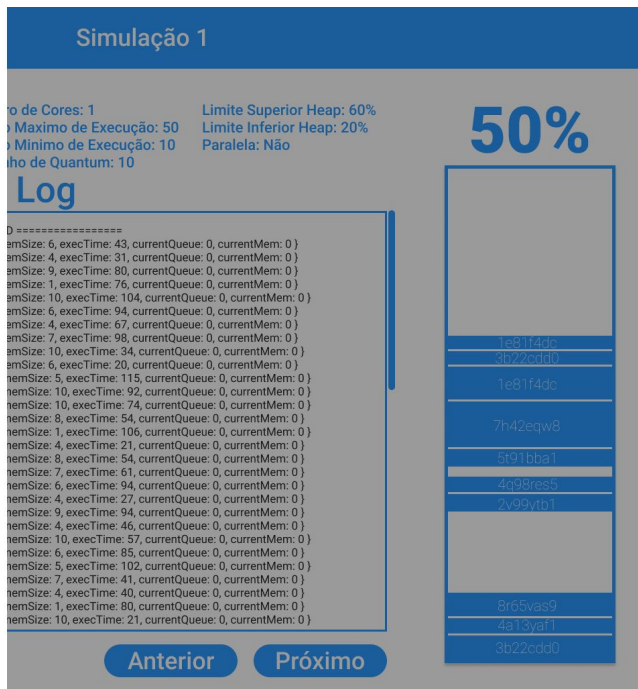
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## Prototipação Interface



Nova Simulação

Visualizar Simulações

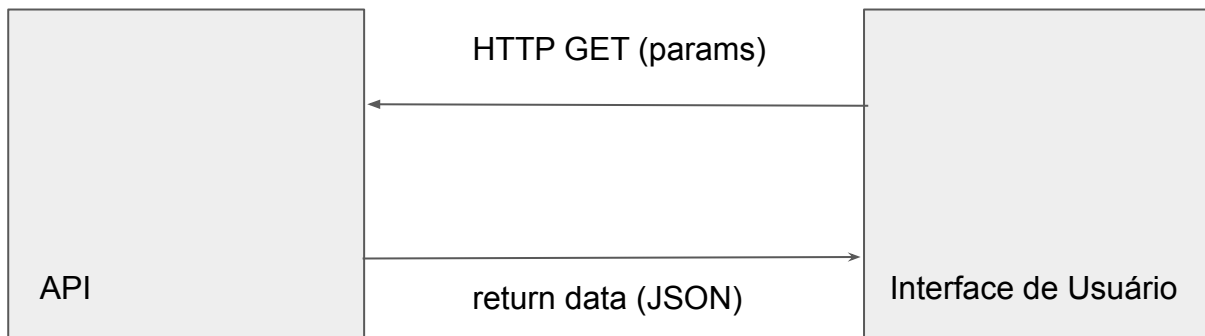


Visualizar Simulações

Simulação 1 **Visualizar**

Simulação 2 **Visualizar**

Simulação 3 **Visualizar**



## Estrutura JSON

```
{
  time: "00:00:08.627",
  maxSize: 20,
  minSize: 10,
  maxTime: 50,
  minTime: 10,
  numReq: 100,
  quantum: 10,
  heapSize: 256,
  heapUpperLimit: 0.6,
  heapLowerLimit: 0.2,
  numCores: 1,
  log: [
    {
      message: "[2021-09-30 22:55:03.341]: CREATED PROCESS: { id: 0, memSize: 6, execTime: 43, currentQueue: 0, currentMem: 0 }",
      manipulateMem: false,
      memManipulation: {
        type: 1, //0:remove ; 1:add
        start: 10,
        offset: 30,
        PID: "7h42eqw8"
      }
    },
    ...
  ]
}
```



## Comunicação

```
1 package proj.esso.MemManagement.controller;
2
3 import org.springframework.web.bind.annotation.GetMapping;
4 import org.springframework.web.bind.annotation.RequestMapping;
5 import org.springframework.web.bind.annotation.RequestParam;
6 import org.springframework.web.bind.annotation.RestController;
7
8 import proj.esso.MemManagement.controller.memorymanagement.sync.MemoryManagement;
9 import proj.esso.MemManagement.controller.memorymanagement.sync.NoProcessException;
10
11 @RestController
12 @RequestMapping("/api")
13 public class Index {
14
15     @GetMapping("/")
16     public String index(
17         @RequestParam(name = "minSize", defaultValue = "-1") int minSize,
18         @RequestParam(name = "maxSize", defaultValue = "-1") int maxSize,
19         @RequestParam(name = "minTime", defaultValue = "-1") int minTime,
20         @RequestParam(name = "maxTime", defaultValue = "-1") int maxTime,
21         @RequestParam(name = "numReq", defaultValue = "-1") int numReq,
22         @RequestParam(name = "quantum", defaultValue = "-1") int quantum,
23         @RequestParam(name = "heapSize", defaultValue = "-1") int heapSize,
24         @RequestParam(name = "heapThreshold", defaultValue = "-1") double heapThreshold
25     ) throws NoProcessException, InterruptedException {
26
27         if(minSize == -1 || maxSize == -1 || minTime == -1 || maxTime == -1 || numReq == -1 || quantum == -1 || heapSize == -1 || heapThreshold == -1)
28         {
29             return "Error: Invalid Parameters";
30         }
31
32         MemoryManagement memManagement = new MemoryManagement(maxSize, minSize, maxTime, minTime, numReq, quantum, heapSize, heapThreshold, 1);
33         memManagement.run();
34
35         return memManagement.getLog();
36     }
37 }
```

## Comunicação

```
src > JS App.js > App > componentDidMount
1 import React, {Component} from 'react';
2 import axios from 'axios'
3 import Post from './components/post'
4
5 class App extends Component {
6
7   state = {
8     posts: []
9   }
10
11   componentDidMount(){
12     axios.get('https://jsonplaceholder.typicode.com/posts').then(res => {
13       this.setState({posts: res.data})
14     })
15   }
16
17   render(){
18     return (
19       <div className="App">
20         {this.state.posts.map(post => {
21           return <Post title={post.title} body={post.body}/>
22         })}
23       </div>
24     );
25   }
26 }
27
28
29 export default App;
```

## Links

Diagrama de Sequencia:

[https://lucid.app/lucidchart/66412de7-904b-40f3-a161-9d240d109ecc/edit?beaconFlowId=28D71DE1A6C52054&page=0\\_0#](https://lucid.app/lucidchart/66412de7-904b-40f3-a161-9d240d109ecc/edit?beaconFlowId=28D71DE1A6C52054&page=0_0#)

Diagrama UML:

[https://lucid.app/lucidchart/b3601f46-65e2-4f6e-8f50-916dd5e0f93e/edit?shared=true&page=0\\_0#](https://lucid.app/lucidchart/b3601f46-65e2-4f6e-8f50-916dd5e0f93e/edit?shared=true&page=0_0#)

Link Figma:

<https://www.figma.com/file/qGmVruHDtqEsClqL060Gy9/Trabalho-de-Implementa%C3%A7%C3%A3o-ES%2FSO?node-id=10%3A223>

## Referências

**SILBERSCHATZ. Fundamentos de Sistemas Operacionais.[Digite o Local da Editora]: Grupo GEN, 2015. 978-85-216-3001-2. Disponível em:<https://integrada.minhabiblioteca.com.br/#/books/978-85-216-3001-2/>**

**PRESSMAN, Roger. Engenharia de software. 8. Porto AlegreAMGH 2016. ISBN 9788580555349.[<https://integrada.minhabiblioteca.com.br/#/books/9788580555349>]**