

# Memory Allocation Assignment

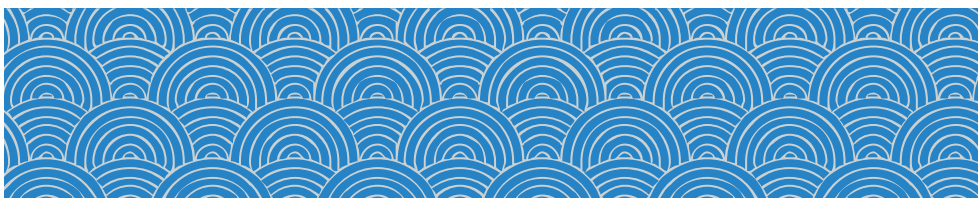
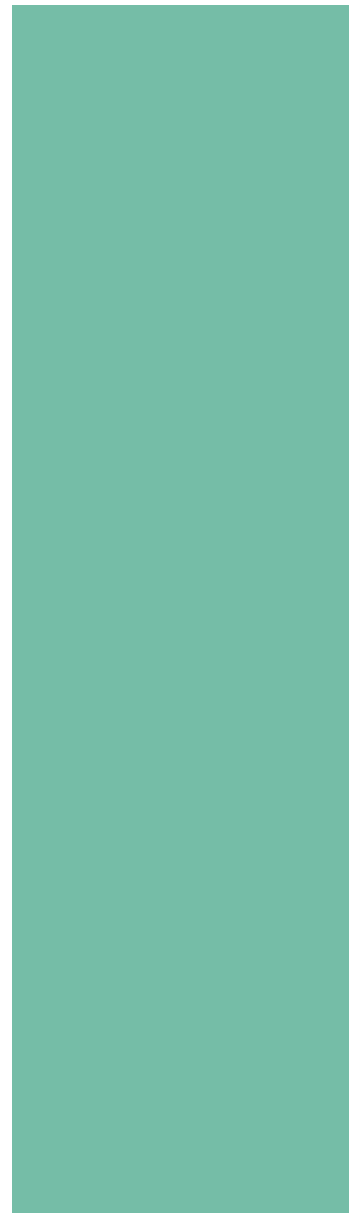
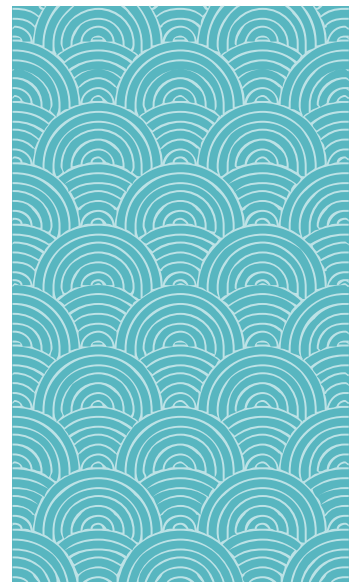
**Operating Systems**

**By:**

Amira Muhammad Fareed

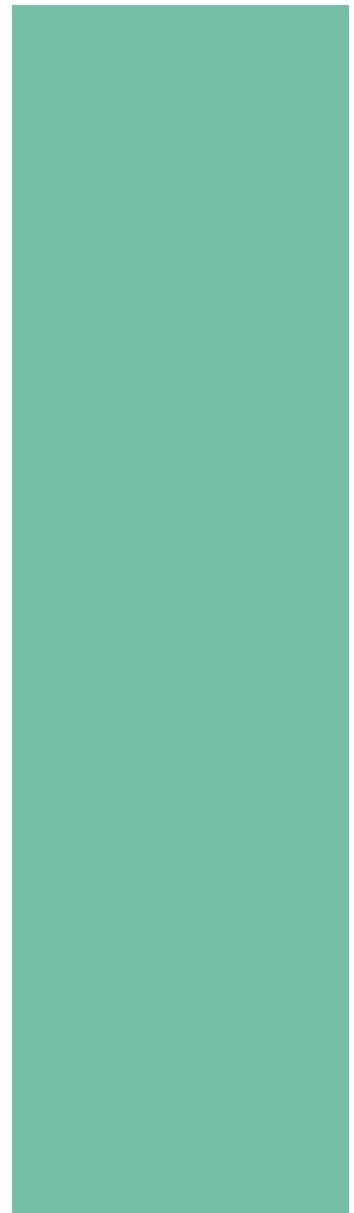
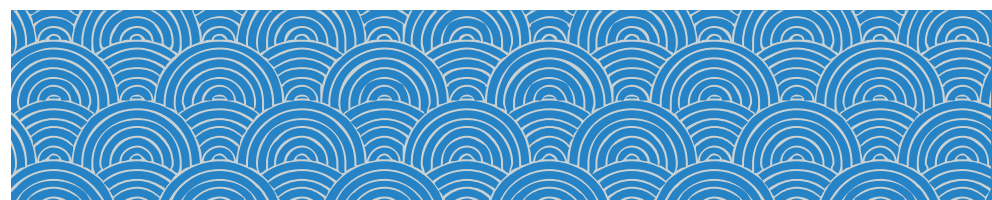
Basma Saeed Ragab

Section: 1



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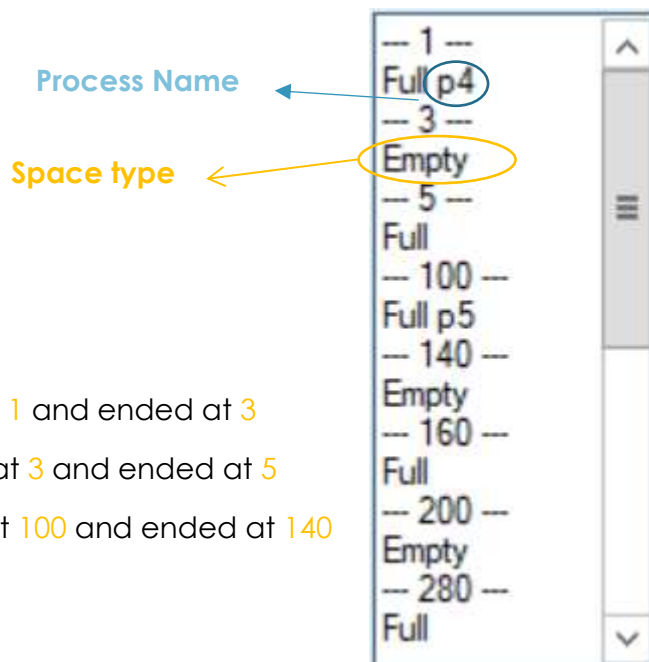
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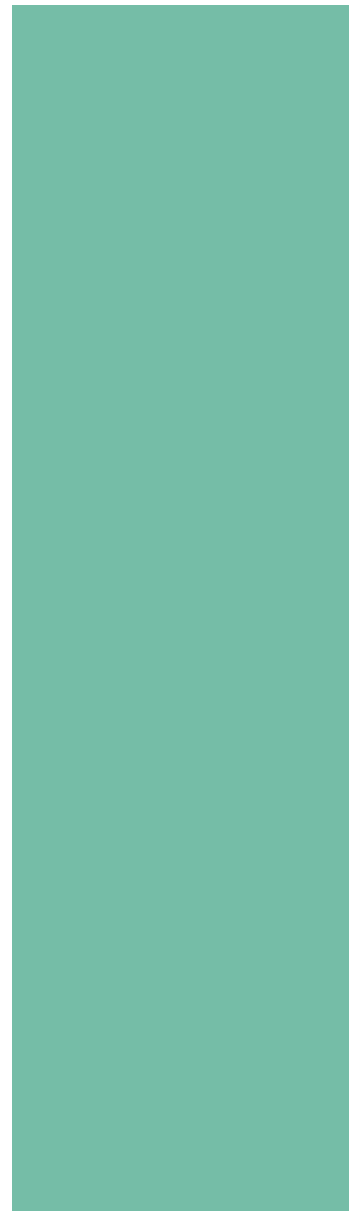
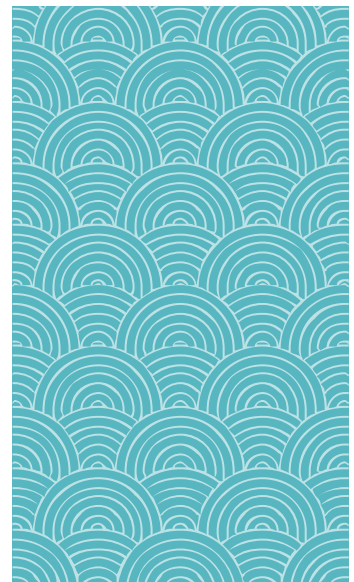
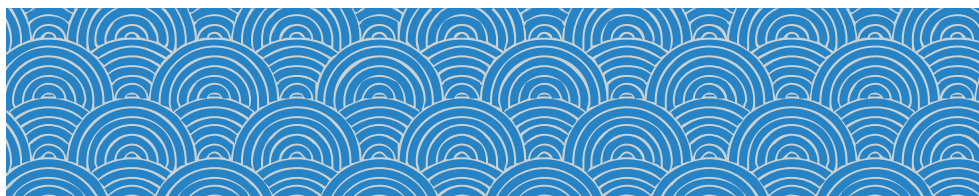
# TYPES OF MEMORY ALLOCATION SUPPORTED:

1. First Fit
2. Best Fit

## MEMORY MAP:

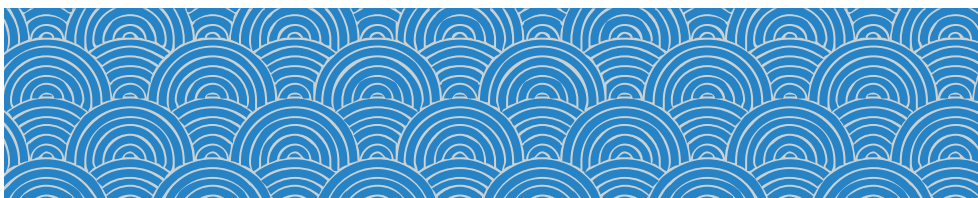
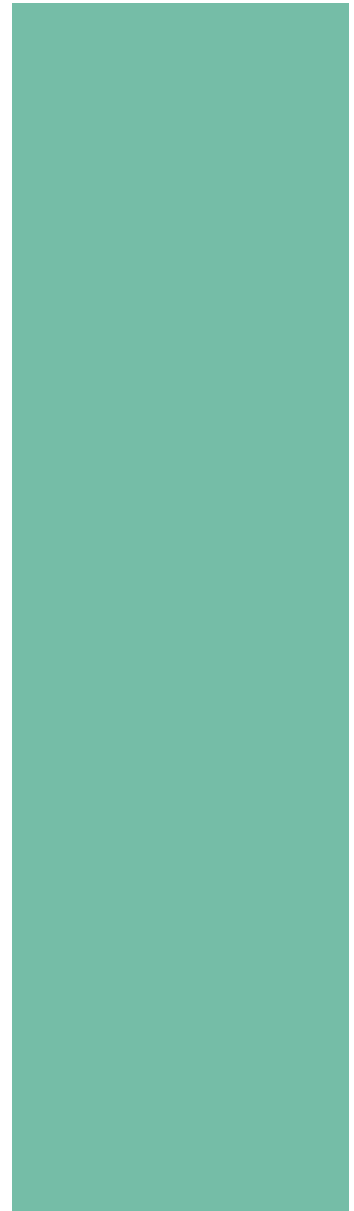


- P4 started at 1 and ended at 3
- Hole started at 3 and ended at 5
- p5 started at 100 and ended at 140
- ... Etc.



# STEPS:

1. Enter Memory Size
2. Enter Type of Allocation
3. For Hole :
  - (1) Enter Hole starting address
  - (2) Enter Hole size
4. For Process :
  - (1) Enter Process Name
  - (2) Enter Process size
5. if you wanna deallocate Process:
  - a) Enter Process name



# EXAMPLES

## 1. FIRST FIT

### INPUT:

Memory Size = 1000

### #Holes

| Starting address | Size |
|------------------|------|
| 100              | 60   |
| 200              | 80   |
| 350              | 10   |
| 0                | 5    |
| 800              | 150  |

1.

General  
Memory Size: 1000  
Input Type: ☒ First Fit ☐ Best Fit  
Submit

#Holes  
Starting Address: 200  
Size: 80  
Submit

#Processes  
Name:   
Size:   
Submit

Memory Segments:  
-- 1 -- Full  
-- 100 -- Empty  
-- 160 -- Full  
-- 200 -- Empty  
-- 280 -- Full  
-- 1000 -- Full

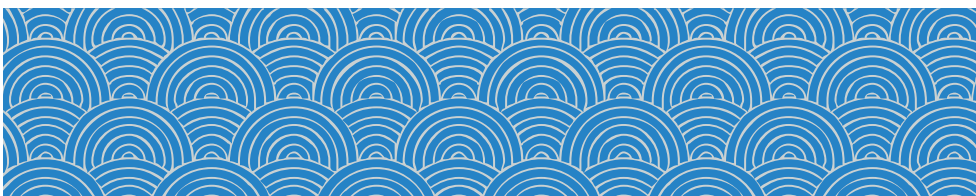
2.

General  
Memory Size: 1000  
Input Type: ☒ First Fit ☐ Best Fit  
Submit

#Holes  
Starting Address: 100  
Size: 60  
Submit

#Processes  
Name:   
Size:   
Submit

Memory Segments:  
-- 1 -- Full  
-- 100 -- Empty  
-- 160 -- Full  
-- 200 -- Empty  
-- 280 -- Full  
-- 1000 -- Full



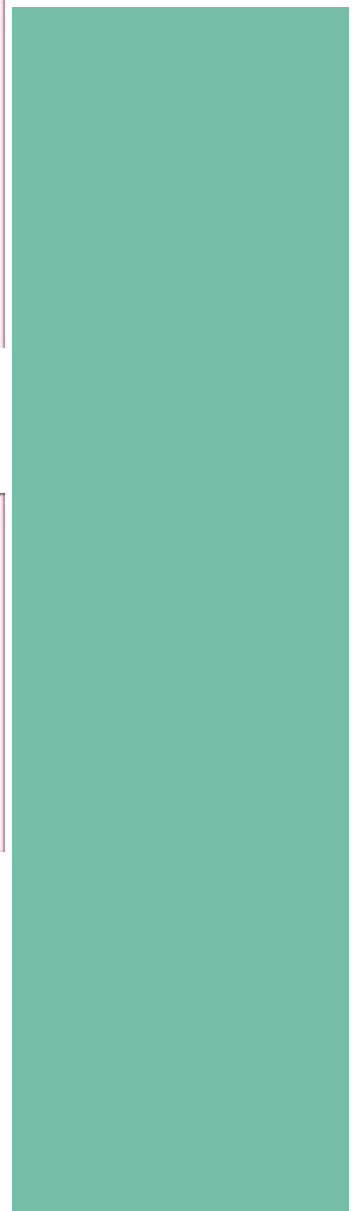
3.

| General  | #Holes   | #Processes                            |   |
|--|--|---------------------------------------|---|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text" value="350"/> | Name: <input type="text"/>            | <div> <input type="radio"/> 1 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 100 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 160 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 200 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 280 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 350 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 360 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 1000 — </div> |
| Input Type: <input checked="" type="radio"/> First Fit<br><input type="radio"/> Best Fit | Size: <input type="text" value="10"/>              | Size: <input type="text"/>            |   |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>              | <input type="button" value="Submit"/> |   |



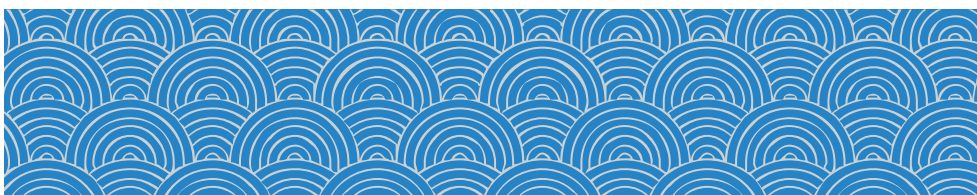
4.

| General  | #Holes   | #Processes                            |   |
|--|--|---------------------------------------|---|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text" value="0"/> | Name: <input type="text"/>            | <div> <input type="radio"/> 1 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 5 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 100 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 160 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 200 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 280 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 350 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 360 —<br/> <input type="radio"/> Full — </div> |
| Input Type: <input checked="" type="radio"/> First Fit<br><input type="radio"/> Best Fit | Size: <input type="text" value="5"/>             | Size: <input type="text"/>            |   |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>            | <input type="button" value="Submit"/> |   |



5.

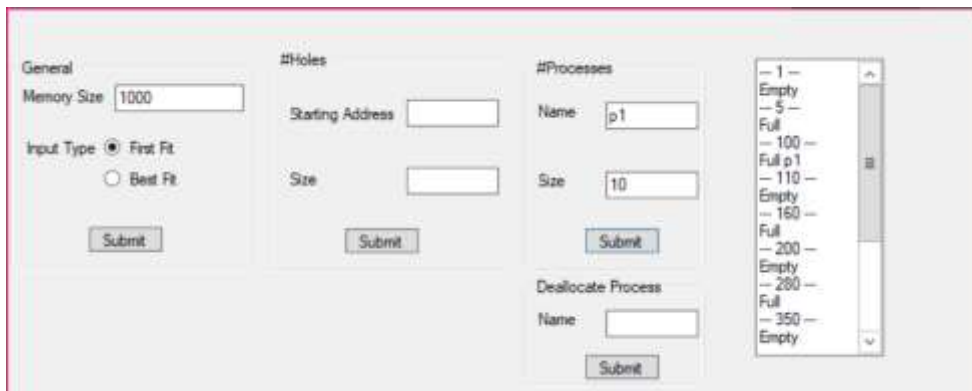
| General  | #Holes   | #Processes                            |  |
|--|--|---------------------------------------|--|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text" value="800"/> | Name: <input type="text"/>            | <div> <input type="radio"/> Empty —<br/> <input type="radio"/> 160 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 200 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 280 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 350 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 360 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 800 —<br/> <input type="radio"/> Empty —<br/> <input type="radio"/> 950 —<br/> <input type="radio"/> Full —<br/> <input type="radio"/> 1000 — </div> |
| Input Type: <input checked="" type="radio"/> First Fit<br><input type="radio"/> Best Fit | Size: <input type="text" value="150"/>             | Size: <input type="text"/>            |  |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>              | <input type="button" value="Submit"/> |  |



## #Processes:

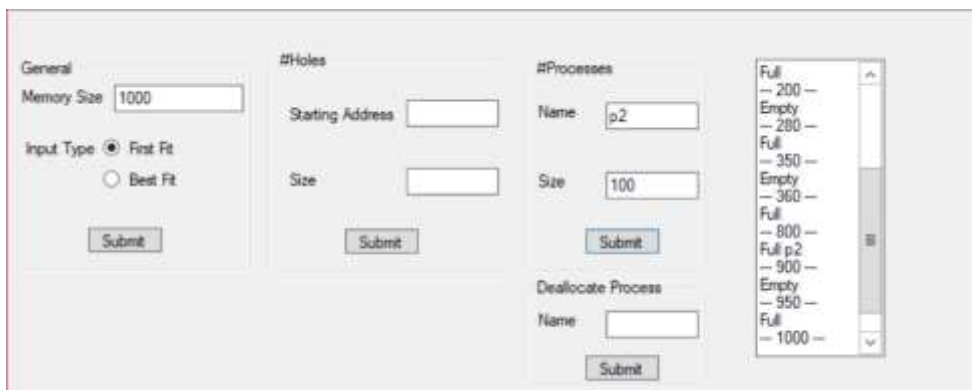
| Name | Size |
|------|------|
| p1   | 10   |
| p2   | 100  |
| p3   | 20   |
| p4   | 3    |
| p5   | 40   |

1.



The screenshot shows a memory management simulation interface. On the left, the 'General' section has 'Memory Size' set to 1000 and 'Input Type' set to 'First Fit'. In the center, the '#Holes' section has 'Starting Address' and 'Size' fields. On the right, the '#Processes' section has 'Name' set to 'p1' and 'Size' set to 10. Below this is a 'Deallocate Process' section with a 'Name' field. To the far right is a vertical memory map showing segments: 1 (Empty), 5 (Empty), 100 (Full), 110 (Full p1), 160 (Empty), 200 (Full), 280 (Empty), 350 (Full), and 1000 (Empty). The 'p1' process is shown occupying the 110-160 segment.

2.



The screenshot shows the same memory management simulation interface. In the '#Processes' section, 'Name' is now 'p2' and 'Size' is 100. The memory map on the right shows the state after allocating p2: 1 (Full), 200 (Empty), 280 (Empty), 350 (Full), 360 (Empty), 800 (Full), 900 (Full p2), 950 (Empty), and 1000 (Full). The 'p2' process is shown occupying the 900-1000 segment.



3.

General  
Memory Size: 1000

Input Type: ☒ First Fit  
☐ Best Fit

Submit

#Holes  
Starting Address:   
Size:

Submit

#Processes  
Name: p3  
Size: 20

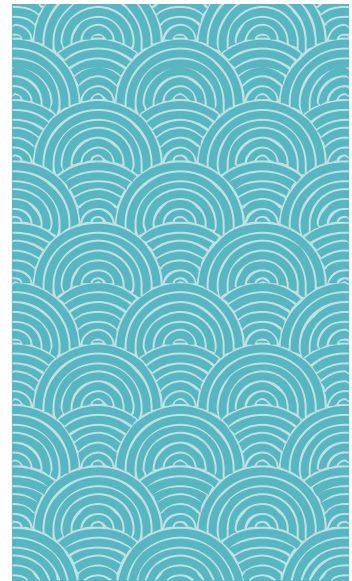
Submit

Dealocate Process  
Name:

Submit

Memory Map:

|     |         |
|-----|---------|
| 1   | Empty   |
| 5   | Full    |
| 100 | Full p1 |
| 110 | Full p3 |
| 130 | Empty   |
| 160 | Full    |
| 200 | Empty   |
| 200 | Full    |



4.

General  
Memory Size: 1000

Input Type: ☒ First Fit  
☐ Best Fit

Submit

#Holes  
Starting Address:   
Size:

Submit

#Processes  
Name: p4  
Size: 3

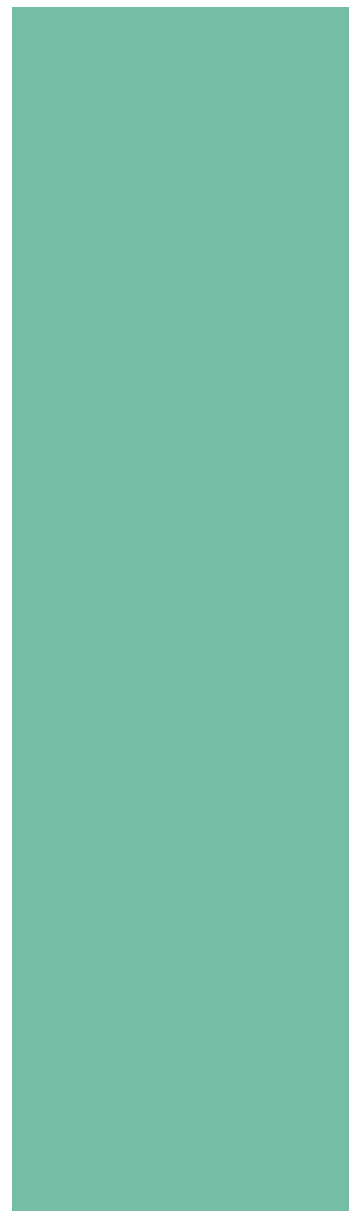
Submit

Dealocate Process  
Name:

Submit

Memory Map:

|     |         |
|-----|---------|
| 1   | Full p4 |
| 3   | Empty   |
| 5   | Full    |
| 100 | Full p1 |
| 110 | Full p3 |
| 130 | Empty   |
| 160 | Full    |
| 200 | Empty   |



5.

General  
Memory Size: 1000

Input Type: ☒ First Fit  
☐ Best Fit

Submit

#Holes  
Starting Address:   
Size:

Submit

#Processes  
Name: p5  
Size: 40

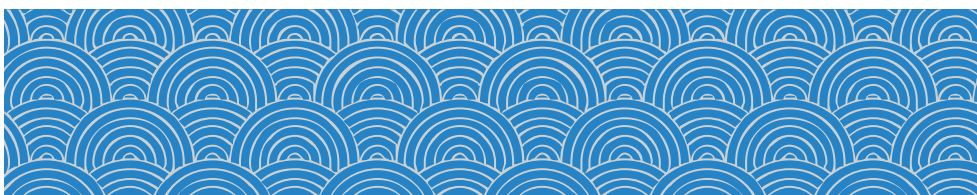
Submit

Dealocate Process  
Name:

Submit

Memory Map:

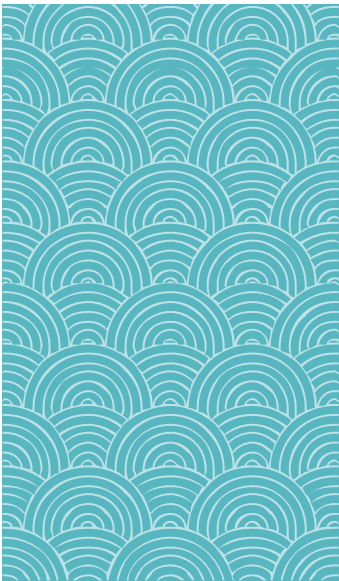
|         |     |
|---------|-----|
| Full p1 | 110 |
| Full p3 | 130 |
| Empty   | 160 |
| Full    | 200 |
| Full p5 | 240 |
| Empty   | 280 |
| Full    | 350 |
| Empty   | 360 |





**OUTPUT:**

--- 1 ---  
Full p4  
--- 3 ---  
Empty  
--- 5 ---  
Full  
--- 100 ---  
Full p1  
--- 110 ---  
Full p3  
--- 130 ---  
Empty  
--- 160 ---  
Full  
--- 200 ---  
Full p5  
--- 240 ---  
Empty  
--- 280 ---  
Full  
--- 350 ---  
Empty  
--- 360 ---  
Full  
--- 800 ---  
Full p2  
--- 900 ---  
Empty  
--- 950 ---  
Full  
--- 1000 ---



## 2. BEST FIT

### INPUT:

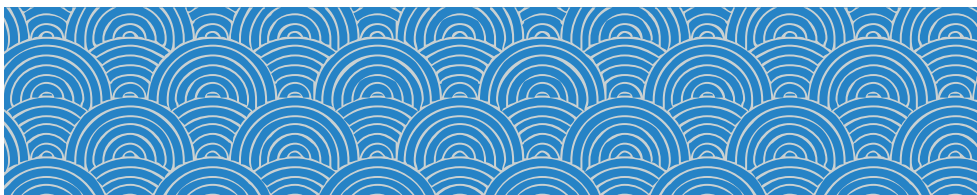
Memory Size = 1000

#### #Holes

| Starting address | Size |
|------------------|------|
| 100              | 60   |
| 200              | 80   |
| 350              | 10   |
| 0                | 5    |
| 800              | 150  |

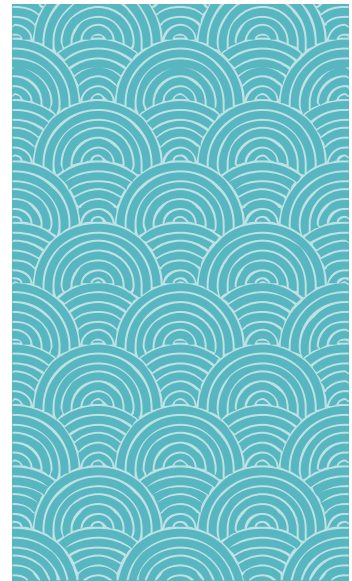
1.

2.



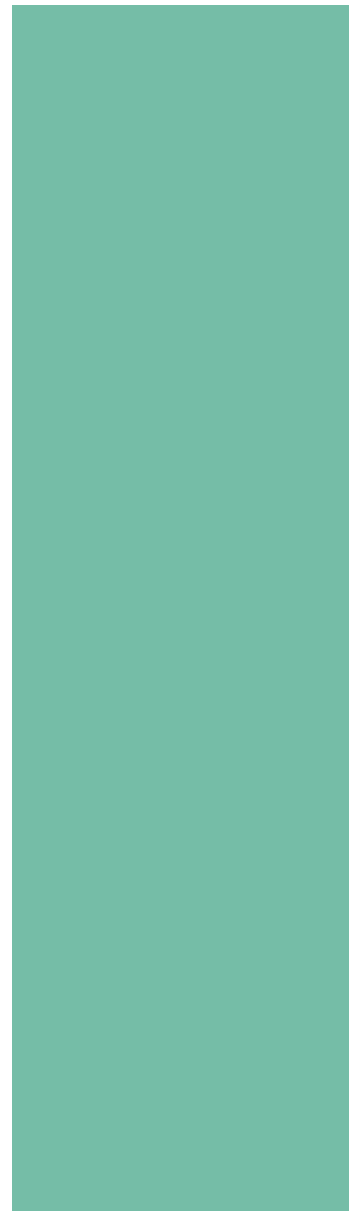
3.

| General  | #Holes   | #Processes                            |  |
|--|--|---------------------------------------|--|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text" value="350"/> | Name: <input type="text"/>            | <div> <input type="button" value="Submit"/> </div> |
| Input Type: <input type="radio"/> First Fit<br><input checked="" type="radio"/> Best Fit | Size: <input type="text" value="10"/>              | Size: <input type="text"/>            |  |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>              | <input type="button" value="Submit"/> |  |



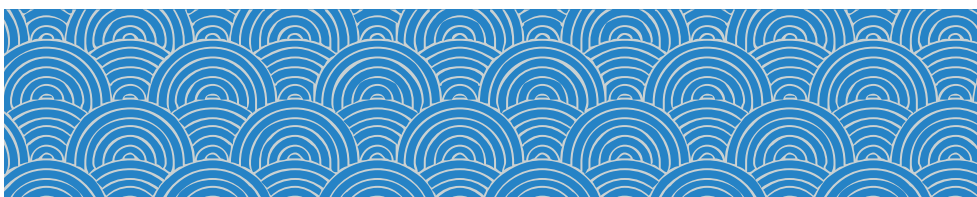
4.

| General  | #Holes   | #Processes                            |  |
|--|--|---------------------------------------|--|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text" value="0"/> | Name: <input type="text"/>            | <div> <input type="button" value="Submit"/> </div> |
| Input Type: <input type="radio"/> First Fit<br><input checked="" type="radio"/> Best Fit | Size: <input type="text" value="5"/>             | Size: <input type="text"/>            |  |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>            | <input type="button" value="Submit"/> |  |



5.

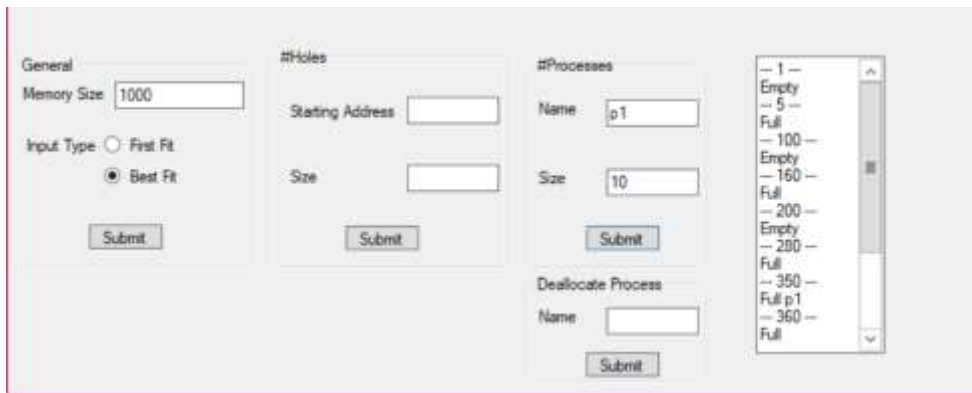
| General  | #Holes   | #Processes                            |  |
|--|--|---------------------------------------|--|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text" value="800"/> | Name: <input type="text"/>            | <div> <input type="button" value="Submit"/> </div> |
| Input Type: <input type="radio"/> First Fit<br><input checked="" type="radio"/> Best Fit | Size: <input type="text" value="150"/>             | Size: <input type="text"/>            |  |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>              | <input type="button" value="Submit"/> |  |



## #Processes:

| Name | Size |
|------|------|
| p1   | 10   |
| p2   | 100  |
| p3   | 20   |
| p4   | 3    |
| p5   | 40   |

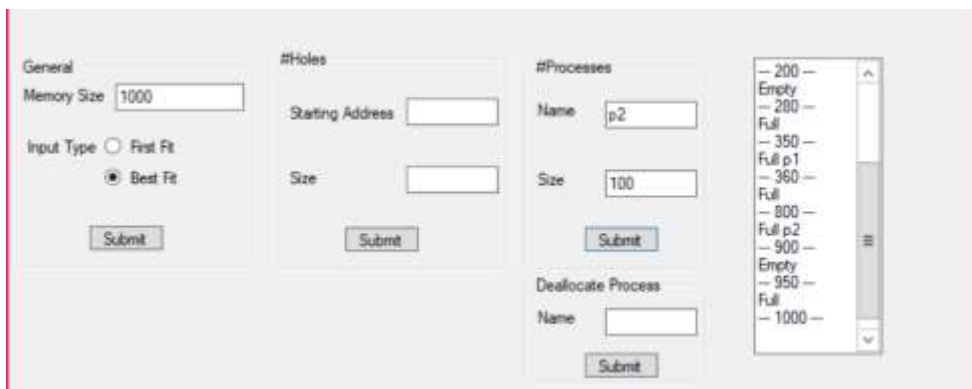
1.



The screenshot shows a memory allocation simulator interface. It has four main sections: General, #Holes, #Processes, and a memory map on the right.

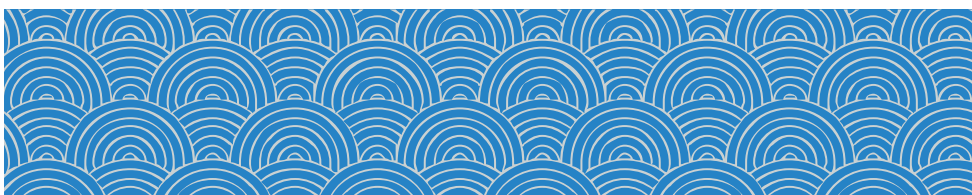
- General:** Memory Size is set to 1000. Input Type has radio buttons for First Fit and Best Fit, with Best Fit selected.
- #Holes:** Starting Address and Size fields are empty.
- #Processes:** Name is set to p1, and Size is set to 10.
- Memory Map (Right):** A vertical list showing memory segments. The first segment (address 1) is marked as 'Empty'. The second segment (address 5) is marked as 'Full'.

2.



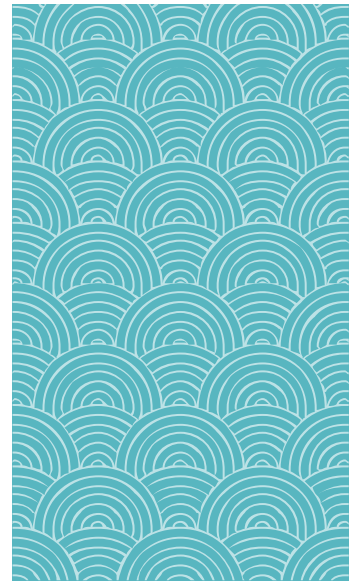
The screenshot shows the same memory allocation simulator interface as in step 1, but with different values.

- General:** Memory Size is set to 1000. Input Type has radio buttons for First Fit and Best Fit, with Best Fit selected.
- #Holes:** Starting Address and Size fields are empty.
- #Processes:** Name is set to p2, and Size is set to 100.
- Memory Map (Right):** A vertical list showing memory segments. The first segment (address 200) is marked as 'Empty'. The second segment (address 280) is marked as 'Full'. The third segment (address 350) is marked as 'Full p1'. The fourth segment (address 360) is marked as 'Full'. The fifth segment (address 800) is marked as 'Full p2'. The sixth segment (address 900) is marked as 'Empty'. The seventh segment (address 950) is marked as 'Full'. The eighth segment (address 1000) is marked as 'Full'.



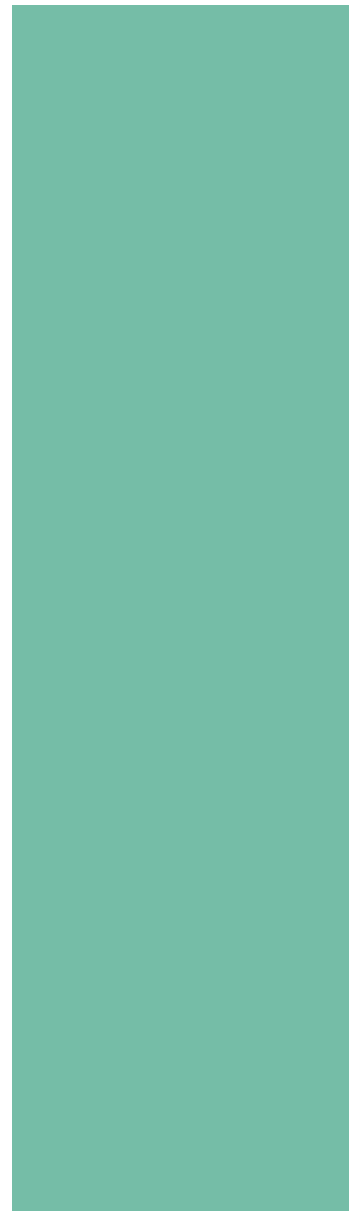
3.

| General  | #Holes                                 | #Processes                            |   |
|--|--|---------------------------------------|---|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text"/> | Name: <input type="text" value="p3"/> | <div> Empty<br/> 280<br/> Full<br/> 350<br/> Full p1<br/> 360<br/> Full<br/> 800<br/> Full p2<br/> 900<br/> Full p3<br/> 920<br/> Empty<br/> 950<br/> Full<br/> 1000 </div> |
| Input Type: <input type="radio"/> First Fit<br><input checked="" type="radio"/> Best Fit | Size: <input type="text"/>             | Size: <input type="text" value="20"/> |   |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>  | <input type="button" value="Submit"/> |   |
| Dealocate Process<br>Name: <input type="text"/><br><input type="button" value="Submit"/> |  |                                       |   |



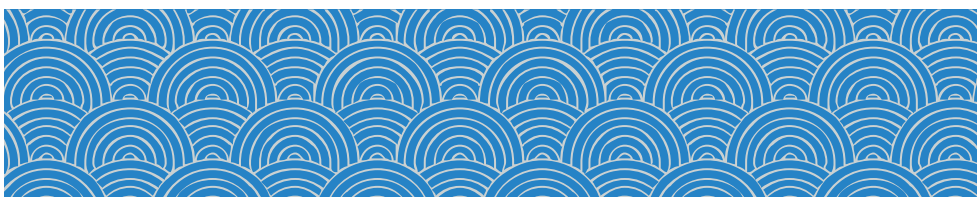
4.

| General  | #Holes                                 | #Processes                            |  |
|--|--|---------------------------------------|--|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text"/> | Name: <input type="text" value="p4"/> | <div> 1<br/> Full p4<br/> 3<br/> Empty<br/> 5<br/> Full<br/> 100<br/> Empty<br/> 160<br/> Full<br/> 200<br/> Empty<br/> 280<br/> Full<br/> 350<br/> Full p1 </div> |
| Input Type: <input type="radio"/> First Fit<br><input checked="" type="radio"/> Best Fit | Size: <input type="text"/>             | Size: <input type="text" value="3"/>  |  |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>  | <input type="button" value="Submit"/> |  |
| Dealocate Process<br>Name: <input type="text"/><br><input type="button" value="Submit"/> |  |                                       |  |



5.

| General  | #Holes                                 | #Processes                            |  |
|--|--|---------------------------------------|--|
| Memory Size: <input type="text" value="1000"/>   | Starting Address: <input type="text"/> | Name: <input type="text" value="p5"/> | <div> 1<br/> Full p4<br/> 3<br/> Empty<br/> 5<br/> Full<br/> 100<br/> Full p5<br/> 140<br/> Empty<br/> 160<br/> Full<br/> 200<br/> Empty<br/> 280<br/> Full </div> |
| Input Type: <input type="radio"/> First Fit<br><input checked="" type="radio"/> Best Fit | Size: <input type="text"/>             | Size: <input type="text" value="40"/> |  |
| <input type="button" value="Submit"/>  | <input type="button" value="Submit"/>  | <input type="button" value="Submit"/> |  |
| Dealocate Process<br>Name: <input type="text"/><br><input type="button" value="Submit"/> |  |                                       |  |



**OUTPUT:**

--- 1 ---  
Full p4  
--- 3 ---  
Empty  
--- 5 ---  
Full  
--- 100 ---  
Full p5  
--- 140 ---  
Empty  
--- 160 ---  
Full  
--- 200 ---  
Empty  
--- 280 ---  
Full  
--- 350 ---  
Full p1  
--- 360 ---  
Full  
--- 800 ---  
Full p2  
--- 900 ---  
Full p3  
--- 920 ---  
Empty  
--- 950 ---  
Full  
--- 1000 ---

