ASSIGNMENT-3 REPORT

COMPUTATIONAL INTENSIVE:

1. how does increase in MAX_NUM value affect page allocation?

The MAX_NUM will not affect page allocation because it requires same number of page blocks even after the increase.

MEMORY INTENSIVE:

1.What is the difference between first and second for loop?

```
// First for loop
	for(i = 0; i < rows; i++){
		for(j = 0; j < columns; j++){
			matrix[i][j] = 0;
		}
	}
	// Second for loop
	for(j = 0; j < columns; j++){
		for(i = 0; i < rows; i++){
			matrix[i][j] = 5;
		}
	}
```

First Loop:

- The first loop access memory cells for matrix row-wise in each iteration.
- one row loaded at each time so page fault happens when row changes so page fault will be less.
- each alternative row access a page fault happens so number of page faults "100" in first loop

Second Loop:

- Second loop access memory cells for matrix column wise.
- at each iteration row changes and allocation is in row major and each row takes one page. so the second loop will causes page fault for each alternative matrix[i][j] access so total number of page faults are 512 times 100 hence page fault will be "51200".

2. How many pages are allocated for the matrix?

There are around 512 entries in a column and 100 entries in a row. The pointer of unsigned long type utilizes 8 bytes.

3. Which loop perfumes better?

The first loop performs better because it has less page fault than second loop.

4.What happens if the number of rows increase?

Number of rows increase is directly proportional to gradual increase in physical memory when column is constant.
As I mentioned earlier page fault for first loop will increase in additive manner, but second loop will have multiplicative increase.

5.What happens if the number of columns increase?

Increase in number of columns will not increase the page fault number in loop one but it will increase the page fault in loop 2.