OPERATING SYSTEMS PRACTICAL

CECSC09

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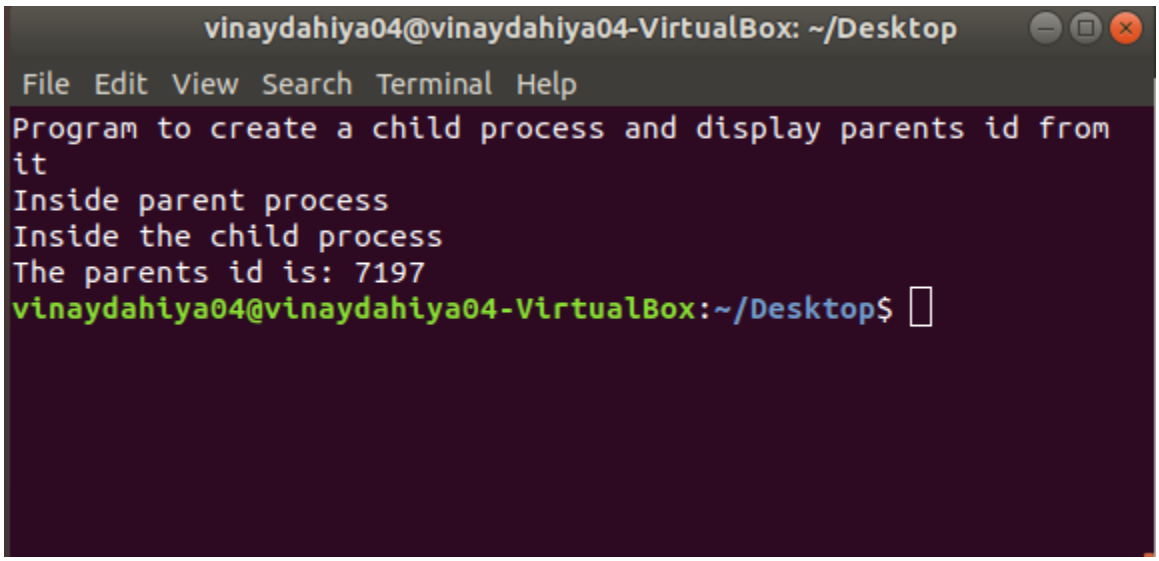
EXPERIMENT 1:

Write a program to create a child process and display the process id of the parent process from the child process.

```
#include<iostream.h>
#include<unistd.h>
using namespace std;

int main() {
	cout << "program to create a child process and display the parents id from it" << endl;

	int val = fork();

	if (val == 0) {
		cout << "inside the child process" << endl;
		cout << "The parents id is " << getppid() << endl;

	}

	else {
		cout << "Inside parent process" << endl;
	}

	return 0;
}
```



EXPERIMENT 2:

Write a program to simulate any page replacement algorithm that suffers from Belady's anomaly. Demonstrate the effect of Belady's anomaly.

```
#include<bits/stdc++.h>
#define all(x) x.begin(),x.end()
using namespace std;
int main() {
	ios::sync_with_stdio(0);
	cout << "Program to simulate First in First out page replacement algorithm\n";
	int frame_size;
	cout << "Enter the frame size in your system :";
	cin >> frame_size;
	set<int> frame;
	map<int, int> indices;
	int hits, misses;
	hits = misses = 0;

	cout << "Enter the page request queue (-1 to exit ):\n";
	int c = 0, min, to_replace, page;
	vector<int> pages;
	pages.reserve(100);
	while (true) {
		cin >> page;
		if (page == -1) break;
		pages.push_back(page);
	}

	for (auto page : pages) {

		if (indices.find(page) == indices.end()) {
			indices[page] = c;
		}

		if (frame.find(page) != frame.end()) {
			hits++;

		}
		else {
			misses++;
			if (frame.size() != frame_size) {

				frame.insert(page);
```

```
                }
                else {

                        min = 1e5;
                        for (auto k : frame) {
                                if (indices[k] < min) {
                                        min = indices[k];
                                        to_replace = k;
                                }
                        }


                        frame.erase(to_replace);
                        indices.erase(to_replace);
                        frame.insert(page);
                }
        }


        c++;
}


cout << "Total number of misses :" << misses << endl;

return 0;
}
```

```
Malik (master *+) Desktop
$ ./os.exe
Program to simulate First in First out page replacement algorithm
Enter the frame size in your system :3
Enter the page request queue (-1 to exit ):
1 2 3 4 1 2 5 1 2 3 4 5 -1
Total number of misses :9
Malik (master *+) Desktop
$ ./os.exe
Program to simulate First in First out page replacement algorithm
Enter the frame size in your system :4
Enter the page request queue (-1 to exit ):
1 2 3 4 1 2 5 1 2 3 4 5 -1
Total number of misses :10
Malik (master *+) Desktop
$
```

(Beladys anomaly can be observed)

EXPERIMENT 3:

Write a program to simulate LOOK algorithm. Let the number of cylinders = 250.

```
#include<bits/stdc++.h>
using namespace std;

int main() {
        cout << "Enter the number of Cylinders" << endl;
        int n; cin >> n;

        vector<int> v(n);
        for (int i = 0; i < n; i++)cin >> v[i];

        sort(v.begin(), v.end());

        cout << "enter current pointer position" << endl;

        int st; cin >> st;

        int ans = abs(v[n - 1] - st);
        ans += v[n - 1] - v[0];

        cout << "The number of cylinders used are " << ans << endl;
        Return 0;
}
```

```
Malik (master *+) Desktop
$ ./os.exe
Enter the number of Cylinders
7
97 16 38 89 84 5 1
enter current pointer position
67
The number of cylinders used are 126
Malik (master *+) Desktop
$
```