

```
Q1_Part1.c
1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <unistd.h>
4 #include <sys/types.h>
5 #include <fcntl.h>
6 #include <string.h>
7 int N=10;
8 int main(){
9     pid_t pid=fork();
10    if(pid>0){
11        //wait(NULL);
12        /*for(int i=1;i<=90;i++){
13            N++;
14        }*/
15        int i=1;
16        while(++N<100){
17            i++;
18        };
19        printf("Parent Process: %d\n",N);
20        printf("Incremented: %d\n",i);
21    }
22    }
23
24 Parent Process: 100
25 Incremented: 90
26 Child Process: -90
27 Decremented: 100
28 [Finished in 2.7s]
```

Processes

```
Q1_Part2.c
11 void* func(void * ptid){
12     int j=1;
13     while(--N>=90){
14         j++;
15     };
16
17     printf("Child Thread: %d\n",N);
18     printf("Decremented: %d\n",j);
19     pthread_exit(NULL);
20     //return NULL;
21 }
22
23 int main(){
24     pthread_t ptid;
25     int a=pthread_create(&ptid, NULL, &func, NULL);
26
27     int i=1;
28     while(++N<100){
29         i++;
30     };
31     printf("Parent Thread: %d\n",N);
32 }
33
34 Parent Thread: 100
35 Incremented: 90
36 Child Thread: -90
37 Decremented: 190
38 [Finished in 1.4s]
```

Threads

Processes

When a parent process spawns a child process, a **copy** of all its resources is given to child processes. So any change in the resources of the child process **will not** be reflected in the resource of the parent process.

Here the resource in question is the global variable N(initialized to 10). Both parent and child process get two different copies.

Parent process increases upto 100. So N is incremented by 90.

Child process decreases upto -90. So N is decremented by -100(since N is still 10 for the child process).

Threads

In case of threads, **almost** all resources of the program are shared with one-another. So in this case variable N is the same for both the threads.

In the particular screenshot, the parent thread is executed first. So N goes from 10 to 100 and is incremented by 90. So N=190 for the child thread. Since it decrements upto -90 decremented comes out to be -190.