

Lab3 is a program with a simple recursive function:

```
$ lab3
```

```
Usage: lab3 levels
```

For a small number of recursions, it runs fine on the original xv6

```
$ lab3 100
```

```
Lab 3: Recursing 100 levels
```

```
Lab 3: Yielded a value of 5050
```

But for a large number of recursions, you will get a page fault since the program tried to access an unmapped page and the original xv6 doesn't have a case to handle page fault T_PGFLT and grow the stack size. So this is what you will get:

```
$ lab3 1000
```

```
Lab 3: Recursing 1000 levels
```

```
pid 5 lab3: trap 14 err 7 on cpu 0 eip 0x109c addr 0x2ffc--kill proc
```

Once you complete both part of lab3, the stack will grow and you will get this:

```
$ lab3 1000
```

```
Initial number of pages by the process: 1
```

```
Lab 3: Recursing 1000 levels
```

```
case T_PGFLT from trap.c: allocvm succeeded. Number of pages allocated: 2
```

```
case T_PGFLT from trap.c: allocvm succeeded. Number of pages allocated: 3
```

```
case T_PGFLT from trap.c: allocvm succeeded. Number of pages allocated: 4
```

```
case T_PGFLT from trap.c: allocvm succeeded. Number of pages allocated: 5
```

```
case T_PGFLT from trap.c: allocvm succeeded. Number of pages allocated: 6
```

```
case T_PGFLT from trap.c: allocvm succeeded. Number of pages allocated: 7
```

```
case T_PGFLT from trap.c: allocvm succeeded. Number of pages allocated: 8
```

```
Lab 3: Yielded a value of 500500
```

As you see, now because of the recursion, we have allocated 7 more pages in addition to the initial 1 page in the beginning. This is how you know that you are growing the stack correctly.

To get these addition prints from your kernel. We recommend that you add these cprintf statements to your code in trap.c:

```

//cs153 - lab3
case T_PGFLT: ;
YOUR CODE
    if (allocvm(YOUR CODE) == 0) {
        cprintf("case T_PGFLT from trap.c: allocvm failed. Number of current allocated pages: %d\n", myproc()-
>stackPages);
        exit();
    }
    YOUR CODE
        cprintf("case T_PGFLT from trap.c: allocvm succeeded. Number of pages allocated: %d\n", myproc()-
>stackPages);
    }
    break;
//PAGEBREAK: 13

```

And add:

```

cprintf("Initial number of pages by the process: %d\n", curproc->stackPages); //cs153 - Lab3

```

In the proper function where you allocate the initial page.