

Operating Systems

Modification Question 10

IMPORTANT: Make sure to **TAKE A COPY** from your original project before start modification

In your project, add a new function to your **USER HEAP** code to **expand the size of the LAST allocated space** to a given size. It's assumed that **there's always a sufficient free space** in the heap after the last allocated space so that it can be expanded.

NOTE: The original data inside the last allocated space should be kept **UNCHANGED**

You need to do the following:

1. Add the following function to your USER HEAP code (lib\uheap.c)

```
void expand(uint32 newSize)
```

2. Inside it, do:
 1. Find the last allocated space
 2. Expand its size to the given new size
 3. Allocate the extra area in the page file ONLY using sys_allocateMem()
 4. Update your data structures that are used for managing the heap (e.g. ones of Best Fit, allocated sizes ...etc).

To test that you have answered the question correctly

1. Add the attached test program "**tst_mod_10**" to your project under "\user" folder
2. In "user_environment.c":

- a. Before the array of user programs, add the following line:

```
DECLARE_START_OF(tst_mod_10);
```

- b. Inside the array of user programs, add the following line:

```
{ "tmod10", "", PTR_START_OF(tst_mod_10)},
```

3. **FOS>** run tmod10 5000 5

If your code is correct, a success message will be displayed