Unix System

Malloc

Contact
b-psu-330@epitech.eu

Contents

Administrative details

- Your sources shall be turned-in on the `PSU_year_malloc` directory
  ex: PSU_2013_malloc for the 2013-2014 scolar year
- Your shared library shall compile with a makefile.
- Your shared library will be called `libmy_malloc_$(HOSTTYPE).so`
  Example, for a Linux library : libmy_malloc_i386-linux.so
- Your Makefile shall create a link to your library called `libmy_malloc.so`

Subject

- You will rewrite the 3 library functions which are malloc, free and realloc using only brk/sbrk and your mind. (Do not even think about using the malloc function from the C library).
- Your function prototypes will be the same as the ones from the C library.

```
1 void *malloc(size_t size);
2 void *realloc(void *ptr, size_t size);
3 void free(void *ptr);
```

And will be contained in the library compiled by your Makefile.

All your programs using malloc should work with your own malloc. So remember to test it with many existing programs.

Some programs use their own allocation system and memory management. So think about what kind of tests you are going to perform.

- To allow you better control, you are also asked to create a function `show_alloc_mem()`. It displays the status of allocated areas to the screen. (to insert in the library) The display will look like this, with addresses in ascending order :

```
1 break : 0xB0000
2 0xA0000 - 0xA41CA : 16842 bytes
3 0xAE000 - 0xAE03F : 63 bytes
4 ....
```

- A bot is available to test your functions here `/u/all/astek/public/test_malloc` and will be used during the defense.

Do not limit yourself by testing exclusively with the bot. It is provided to give you an idea and it only tests simple cases. More advanced tests will be made during the defense (small and large allocations, series of malloc/free, optimization of the ram used, ...)

Indices Remember that the addresses returned by malloc (and others) are aligned.

- Bonus : handling /etc/malloc.conf

Forbidden functions

- mmap
- munmap
- calloc
- malloc
- free
- realloc

Allowed functions

- All functions in the C library that are not mentioned in the forbidden functions list above.