# Project 4 Write Up

Group 22

November 24, 2014

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## Our Plan

To implement our best fit memory allocation algorithm we will first have to understand how the current slob allocator works. After a quick search the stock slob memory allocator is built with the first fit algorithm. This means that the first page with that has enough room for the current memory allocation request is used. Within the page the first block that can fit the requested memory is also use.
What we need to do is instead of jumping on the fist space available that the request can fit into, we need to find the best fitting space. To find the best fitting space we must first look though all of the available spaces to determine which would fit the requests need the best. Once the best fit is found we then allocate the memory there. One thing that we need to check for is that we are checking each page for the best fit block size.

## Our Solution

Within the *slob_alloc()* function the first page that comes along is sent to the *slob_page_alloc()* function for allocation. We created a *best_page()* function that will return the best fitting block within the current page. This is used to compare each page with each other to ensure that we indeed have the best fit. The *best_page()* function is essentially the same as the *slob_page_alloc()* function without the allocating code.
Once we have the best page within the *slob_page_alloc()* function we find the best block for the current request. We use the same loop as *best_page()* function but once the end of the loop is reached it begins to allocate the memory instead for just returning a number. In the case that the current block being checked if it is the new best is the same size as the current request the loop is short circuited because there is no better fit than the same size.
The best fit algorithm is very slow. There are a lot of request for memory allocation and each time every page has to be checked then each block within that page. The only performance increase we have implemented in our algorithm is the short circuit of an exact fit.

## Work Log

| Date | Author | Commit | Summary |
|---|---|---|---|
| Sun Nov 16 13:03 | Bob | cb489e02673be2a13b4a2ebbc13bf585aa08068f | Added project 4 directory. |
| Wed Nov 19 13:46 | Sam Quinn | 800d9d0d0aa8b69d2677bd601e4d40e6cfaad4b2 | Need to do some work still on slob.c |
| Thu Nov 20 13:42 | Bob | fe7d942416b0c54094a67dee2512c12ce5950038 | Think it should best fit slob should work first compile, Lets see. |
| Sat Nov 22 11:13 | Bob | 91a9b3fe4cbf75fce38587c4a4243d1d912505bb | Fixed loop problem in the slob alloc where it tries to find the best page. |
| Sat Nov 22 20:12 | Bob | f1531eccc1b9c35f694c6f2521c168d39fd055e7 | I think this works but need to fix some modules. |
| Sun Nov 23 15:33 | Bob | 2c2974b3185917312246db0d0b93e86bc0290684 | Fixed some print statements and added some more comments. |
| Sun Nov 23 20:44 | Bob | ea095bc6fb797c1caacaa52e863de4f09fc10ba7 | Fixed the memorry leak. |
| Mon Nov 24 09:58 | Bob | df181b728215f052c633fcbcc955f1c75390a481 | Final version of the bestfit slob algorithim. |
| Mon Nov 24 10:04 | Bob | c83a3017298cf8a6e70cce375344ca460c38d402 | Added writeup files. |