**Design**

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Task 2.1： there are two methods for efficient finding of Empty Frame: keep a free list or make a bit map, in this project, we choose the first one. *freelist* in this project is a stack of integer (buffer ID). When initialize a new BasicBufferMgr, we create a new *freelist* with all the buffer id push in since at beginning, all buffers are free to use. In function *Pin*, if a buffer is used, get this buffer id and remove from the *freelist.* In function *unpin*, if a buffer has been unpinned, get its buffer ID and push back into *freelist*, when system need to choose a unpinned buffer to use, pop one from *freelist*. In order to printing out the information about this *freelist* for testing purpose*,* we add a helper function *getFreelist* to return *freelist.*