7. (a) (5 points) When considering the performance of caches, what are compulsory cache misses? Is there any way to reduce them? How?

> **Solution:**
>
> Compulsory misses occur when a data is accessed for the first time in a program. Since there were no prior accesses this data will not be located in the cache and will have to be fetched.
>
> A larger block size can be used to reduce the compulsory misses. This takes advantage of spatial locality. When there is a cache miss, not only the required data is loaded into the cache, adjacent words are also automatically loaded into the cache, reducing the possibility of further compulsory misses.