Chapter 22

1.

	FIFO	OPT	LRU
-s 0: 8742547345	10%	40%	20%
-s 1: 1872446700	20%	30%	20%
-s 2: 9900876366	40%	40%	40%

2.
For a cache size of 5:
-addresses 1,2,3,4,5,6,1,2,3,4,5,6,1,2,3,4,5,6… can be the worst case for FIFO and LRU:
0 hit.
-addresses 1,2,3,4,5,6,5,6,5,6,5,6,5,6,5,6… can be the worst case for MRU:
0 hit.
For all of them, a minimum cache size of 6 will improve hit rate a lot.

3. Please see trace.py in the same folder.
For a random trace, addresses are randomly distributed. MRU should perform better than FIFO, LRU, because the most recently referenced address is most likely to show up latest.

4. Please see trace.py in the same folder. Temporal locality is generated.
LRU works well on stream with temporal locality, and for this example [5, 11, 11, 8, 4, 5, 5, 5, 5, 5, 16, 12, 10, 4, 1, 10, 10, 10, 10, 10, 12, 16, 5, 7, 4], LRU hit rate is 56%, RAND is 52%, CLOCK is 52% with 2 or more bits. (Theoretically the more clock bits the hit rate should be better).