Hanyu Xiong

CS1550 Project 3

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| --- | --- | --- | --- | --- |
| NRU bzip | 8 frames | 32 frames | 64 frames | 128 frames |
| 5 | 505552 | 511642 | 507023 | 509924 |
| 10 | **466437** | 461149 | 460872 | 465836 |
| 50 | 539730 | 329519 | 318581 | 316220 |
| 100 | 564402 | 337127 | 254703 | 253926 |
| 300 | 596924 | 328495 | 164678 | 57072 |
| 600 | 606067 | 313072 | 149022 | **53649** |
| 1000 | 616589 | **312647** | **148126** | 55327 |
| 1200 | 622130 | 315372 | 150028 | 57238 |

After sampling the page faults with different refresh rates, the best choice seems to be 100 for bzip.trace and 1000 for gcc.trace. The results from the sampling can be seen below in the table and in the graph representation. 1000 seems to be the best choice for bzip because it had the lowest page faults for both 32 and 64 frames, and for 128 frames it had the second lowest. 100 seems to be the best choice for gcc because it had the lowest page faults for both 64 frames, and for 32 and 128 frames it had the second lowest. For 8 frames the lowest always seemed to be at 10, so it was not taking into consideration as much as the other data points.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| NRU gcc | 8 frames | 32 frames | 64 frames | 128 frames |
| 5 | 682354 | 685475 | 682898 | 680992 |
| 10 | **648906** | 637045 | 636022 | 633829 |
| 50 | 700086 | **546230** | 530488 | 529291 |
| 100 | 723458 | 564354 | **493942** | 482714 |
| 300 | 766604 | 617719 | 530190 | **451526** |
| 600 | 796149 | 649694 | 571108 | 491634 |

Based on my results, I would say that in an actual system, the most appropriate to use would be the clock algorithm. In most of the cases, it outperformed the NRU and random algorithm, even though it does take some memory to keep a circular queue data structure. Compared to the optimal algorithm, the cloth algorithm gave the maximum number of closest data values.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BZIP.trace | Opt | Random | NRU(1000) | Clock |
| 8 frames | 371156 | 501747 | 616589 | 470268 |
| 32 frames | 201629 | 342120 | 312647 | 334886 |
| 64 frames | 84752 | 162274 | 148126 | 290773 |
| 128 frames | 36860 | 56435 | 55327 | 48071 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| GCC.trace | Opt | Random | NRU(100) | Clock |
| 8 frames | 544651 | 677000 | 723458 | 646322 |
| 32 frames | 438057 | 573425 | 564354 | 552481 |
| 64 frames | 392444 | 521020 | 493942 | 493912 |
| 128 frames | 346445 | 474304 | 482714 | 450671 |