**作业4：**在页式存储系统中，某程序地址空间有 4 页(每页 2048 字节)，求出逻辑地址 4865 所对应的物理地址。



**解：**页号 = 4865 / 2048 = 2，页内偏移 = 4865 % 2048 = 769

查表得块号 = 6

物理地址 = 6 \* 2048 + 769 = 13057

**作业5：**某程序在内存中分配初始为空，页面走向为4，3，2，1，4，3，5，4，3，2，1，5，分别采用OPT、FIFO、LRU页面置换算法，分配的物理块数M分别为3、4时，给出置换过程，计算缺页次数、缺页率。

（1）

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| OPT | 4 | 3 | 2 | 1 | 4 | 3 | 5 | 4 | 3 | 2 | 1 | 5 |
| 块1 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 块2 |  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 1 | 1 |
| 块3 |  |  | 2 | 1 | 1 | 1 | 5 | 5 | 5 | 5 | 5 | 5 |
|  | **×** | **×** | **×** | **×** |  |  | **×** |  |  | **×** | **×** |  |

页面访问次数=12，缺页次数=7，缺页率=7/12≈58.3%

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| OPT | 4 | 3 | 2 | 1 | 4 | 3 | 5 | 4 | 3 | 2 | 1 | 5 |
| 块1 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 块2 |  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 块3 |  |  | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| 块4 |  |  |  | 1 | 1 | 1 | 5 | 5 | 5 | 5 | 5 | 5 |
|  | **×** | **×** | **×** | **×** |  |  | **×** |  |  |  | **×** |  |

页面访问次数=12，缺页次数=6，缺页率=6/12=50%

（2）

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FIFO | 4 | 3 | 2 | 1 | 4 | 3 | 5 | 4 | 3 | 2 | 1 | 5 |
| 块1 | 4 | 4 | 4 | 1 | 1 | 1 | 5 | 5 | 5 | 5 | 5 | 5 |
| 块2 |  | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 2 | 2 | 2 |
| 块3 |  |  | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 1 | 1 |
|  | **×** | **×** | **×** | **×** | **×** | **×** | **×** |  |  | **×** | **×** |  |

页面访问次数=12，缺页次数=9，缺页率=9/12=75%

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FIFO | 4 | 3 | 2 | 1 | 4 | 3 | 5 | 4 | 3 | 2 | 1 | 5 |
| 块1 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 1 | 1 |
| 块2 |  | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 |
| 块3 |  |  | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
| 块4 |  |  |  | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
|  | **×** | **×** | **×** | **×** |  |  | **×** | **×** | **×** | **×** | **×** | **×** |

页面访问次数=12，缺页次数=10，缺页率=10/12≈83.3%

（3）

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LRU | 4 | 3 | 2 | 1 | 4 | 3 | 5 | 4 | 3 | 2 | 1 | 5 |
| 块1 | 4 | 4 | 4 | 1 | 1 | 1 | 5 | 5 | 5 | 2 | 2 | 2 |
| 块2 |  | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 1 |
| 块3 |  |  | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 |
|  | **×** | **×** | **×** | **×** | **×** | **×** | **×** |  |  | **×** | **×** | **×** |

页面访问次数=12，缺页次数=10，缺页率≈83.3%

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LRU | 4 | 3 | 2 | 1 | 4 | 3 | 5 | 4 | 3 | 2 | 1 | 5 |
| 块1 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 |
| 块2 |  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 块3 |  |  | 2 | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 1 | 1 |
| 块4 |  |  |  | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
|  | **×** | **×** | **×** | **×** |  |  | **×** |  |  | **×** | **×** | **×** |

页面访问次数=12，缺页次数=8，缺页率=8/12≈66.7%