Report

TLB Replacement Policy

- LRU
  - sys_config.txt

```
TLB Replacement Policy: LRU
Page Replacement Policy: FIFO
Frame Allocation Policy: GLOBAL
Number of Processes: 2
Number of Virtual Page: 128
Number of Physical Frame: 64
```

  - analysis.txt

```
Process A, Effective Access Time = 164.758
Process A, Page Fault rate = 0.723
Process B, Effective Access Time = 163.709
Process B, Page Fault rate = 0.665
```

- RANDOM
  - sys_config.txt

```
TLB Replacement Policy: RANDOM
Page Replacement Policy: FIFO
Frame Allocation Policy: GLOBAL
Number of Processes: 2
Number of Virtual Page: 128
Number of Physical Frame: 64
```

  - analysis.txt

```
Process A, Effective Access Time = 165.200
Process A, Page Fault rate = 0.723
Process B, Effective Access Time = 163.333
Process B, Page Fault rate = 0.665
```

- 若範例input來看，LRU和RANDOM並沒有造成太大的差距，稍微可以看出使用RANDOM的時候Process A的TLB miss比較多，Process B的TLB miss比較少，因為TLB miss 但Page hit的時候會多一次查詢時

間，但不會增加Page Fault

- 造成這個結果可能是因為input file並沒有很規律的重複reference相同的page，如果process一直reference差不多的page的時候，LRU的效果會比reference好

Page Replacement Policy

- FIFO
  - sys_config.txt

```
TLB Replacement Policy: LRU
Page Replacement Policy: FIFO
Frame Allocation Policy: GLOBAL
Number of Processes: 2
Number of Virtual Page: 128
Number of Physical Frame: 64
```

  - analysis.txt

```
Process A, Effective Access Time = 164.758
Process A, Page Fault rate = 0.723
Process B, Effective Access Time = 163.709
Process B, Page Fault rate = 0.665
```

- CLOCK
  - sys_config.txt

```
TLB Replacement Policy: LRU
Page Replacement Policy: CLOCK
Frame Allocation Policy: GLOBAL
Number of Processes: 2
Number of Virtual Page: 128
Number of Physical Frame: 64
```

  - analysis.txt

```
Process A, Effective Access Time = 164.758
Process A, Page Fault rate = 0.723
Process B, Effective Access Time = 163.709
Process B, Page Fault rate = 0.665
```

- 兩者看起來並沒有差異，因此我準備了LOCAL的來做比對

- FIFO
    - sys_config.txt

```
TLB Replacement Policy: LRU
Page Replacement Policy: FIFO
Frame Allocation Policy: LOCAL
Number of Processes: 2
Number of Virtual Page: 128
Number of Physical Frame: 64
```

    - analysis.txt

```
Process A, Effective Access Time = 164.980
Process A, Page Fault rate = 0.774
Process B, Effective Access Time = 163.144
Process B, Page Fault rate = 0.700
```

- CLOCK
    - sys_config.txt

```
TLB Replacement Policy: LRU
Page Replacement Policy: CLOCK
Frame Allocation Policy: LOCAL
Number of Processes: 2
Number of Virtual Page: 128
Number of Physical Frame: 64
```

    - analysis.txt

```
Process A, Effective Access Time = 164.980
Process A, Page Fault rate = 0.774
Process B, Effective Access Time = 163.522
Process B, Page Fault rate = 0.694
```

- 使用clock 的話有機會使Page fault rate在local的時候變小，如果頻繁接觸某幾個page的話，clock policy可以保留頻繁接觸的frame但fifo不行

Frame Allocation Policy

- GLOBAL
    - sys_config.txt

```
TLB Replacement Policy: LRU
Page Replacement Policy: FIFO
Frame Allocation Policy: GLOBAL
Number of Processes: 2
Number of Virtual Page: 128
Number of Physical Frame: 64
```

- analysis.txt

```
Process A, Effective Access Time = 164.758
Process A, Page Fault rate = 0.723
Process B, Effective Access Time = 163.709
Process B, Page Fault rate = 0.665
```

- LOCAL
  - sys_config.txt

```
TLB Replacement Policy: LRU
Page Replacement Policy: FIFO
Frame Allocation Policy: LOCAL
Number of Processes: 2
Number of Virtual Page: 128
Number of Physical Frame: 64
```

  - analysis.txt

```
Process A, Effective Access Time = 164.980
Process A, Page Fault rate = 0.774
Process B, Effective Access Time = 163.144
Process B, Page Fault rate = 0.700
```

- page fault的話global會有比local還要好的效果，因為global能夠根據當下process執行的狀況來分配適當的page，找到process比較夠用的page數量
- 但因為effective access rate受到TLB的影響比較多，所以影響沒有那麼大
- 另外,綜合frame policy和page policy，在範例測資中相同TLBpolicy下，frame policy對Page fault rate的影響會比較大