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To stimulate page Replacement Algorithm

1) FIFO

```
#include <stdio.h>
#define frame size 3

Void fifo (int reference_string [], int length ){
int frames [frame_size];
 int front = 0;
 for (i=0 ; i < frame_size ; i++)
    frame [i] = -1 ; {
 int page faults = 0;
    for (i=0 ; i <length ; i++)
       int page = reference_string[i];
       int found = 0 ;
    for (j=0 ; j < frame size ; j++)
      if ( frame [j] == page ){
          found = 1 ;
          break;
 } }
  if (! found ) {
    frames [front] = page;
    front = (front + 1) % frame size;
       page faults ++ ; }
    printf (" page %d : [" page) ;
      for (j=0 ; j < frame size ; j++)
        if (frames [j] == -1)
            printf (" _ ");
      } else {
          printf (" %d", frames [j]);
  } }
  printf (" \n") ; {
      printf (" Total page faults %d \n"
  }
```

```
int main(){
int length;
printf("Enter the length of reference string:");
scanf("%d", &length);
int reference_string[length];
printf("Enter the reference string\n");
for(i=0; i<len; i++){
scanf("%d", &reference_string[i]);
}
fifo(reference_string, length);
    return 0;
    }
```

Output:

Enter the no of pages: 12
Enter the reference string: 2 3 2 1 5 2 4 5 3 2 5 2

2	-1	-1
2	3	-1
2	3	-1
2	3	1
5	3	1
5	2	1
5	2	4
5	2	4
3	2	4
3	2	4
3	5	4
3	5	2

No. of page faults: 9

2) LRU:

```
#include <stdio.h>
#define frame_size 3
void fifo(int reference_string[], int length){
    int frames[frame_size];
    int fifo_index;
    for (i=0; i<frames_size; i++)
        frames[i] = -1;}
    int page_faults = 0;
    for (i=0; i<frames_size; i++){
        frames[i] = -1;}
    int page_faults = 0;
    for (j=0; j<frame_size; j++){
        if (frames[j] == page){
        found = 1
        fifo_index = j
        break;}}
printf("page %d: [", page);
    if (frames[j] == -1){
        printf("_ ");
    }
else {
    printf("%d", frames[j]);
}}
printf("]\n");}
printf("Total page faults: %d\n", page_fa
}
int main(){
    int length;
    printf("Enter the length of reference str
    Scanf("%d", &length);
```

```
int reference_string[length];
printf("Enter the reference string\n");
for(i=0; i<length; i++){
scanf("%d", &reference_string[i]);
{
printf("LRU page replacement\n");
    return 0;
    }
```

Output:

Enter the no of pages: 12
Enter the reference string: 2 3 2 15 24 5 3252

2	-1	-1
2	3	-1
2	3	-1
2	3	1
2	5	1
2	5	1
2	5	4
2	5	4
3	5	4
3	5	2
3	5	2
3	5	2

No of page faults: 7

3) Optimal :

```
#include <stdio.h>
#include <limits.h>
#define frame_size 3
int find_optimal (int reference_string[], int frames[],
    int start, int leng ;
    int index = -1;
    int farthest = start;
for (i=0; i < frame_size; i++){
  for (j= start; j < length; j++){
  if (frames [i] == reference_string [j]);
    if (j > farthest){
        farthest = j;
          index = i ;}
          break;}
Void optimal (int reference_string[], int length)
  int frames [frame_size];
for (i=0; i < frame_size ; i++){
    frames [i] = -1;
int page_faults = 0 ;
    for (i=0;  i < leg ; i++){
      int found = 0;
for (j=0; j < frame_size; j++){
    if (frames [j] == page){
          found = 1;
          break;
    }}
printf ("Total page faults: %d \n", page_faults);
int main(){
    int length;
    printf ("Enter leng reference string");
```

```
scanf("%d", &des);
printf("Enter reference string\n");
scanf("%d", &reference_string[i])
}
printf("optimal page replacement\n");
optimal(reference_string, length);
return 0;
}
```

Output:

```
Enter the length: 12
Enter the reference string: 1 2 3 4 1 2 5 1 2 3 4 5
```

```
1  -1  -1
1   2  -1
1   2   3
1   2   4
1   2   4
1   2   4
1   2   5
1   2   5
1   2   5
3   2   5
4   2   5
4   2   5
4   2   5
```

No. of page faults : 7
page fault rate : 58.33.

```
Frames: 2 0 0
Frames: 2 3 0
Frames: 2 3 4
Frames: 2 3 4
Frames: 1 3 4
Frames: 1 3 4
Frames: 1 7 4
Frames: 1 7 5
Frames: 4 7 5
Frames: 4 3 5
Total Page Faults: 8
```

```
2          -1          -1
2          3           -1
2          3           6
1          3           6
1          7           6
1          7           5

Total Page Faults = 6
```

```
Frames: 2 0 0
Frames: 2 3 0
Frames: 2 3 4
Frames: 2 3 4
Frames: 1 3 4
Frames: 1 3 4
Frames: 7 3 4
Frames: 5 3 4
Frames: 5 3 4
Frames: 5 3 4
Total Page Faults: 6
```