

Ex. No.: 11c)  
Date: 22/4

### Optimal

Aim:

To write a c program to implement Optimal page replacement algorithm.

#### ALGORITHM:

1. Start the process
2. Declare the size
3. Get the number of pages to be inserted
4. Get the value
5. Declare counter and stack
6. Select the least frequently used page by counter value
7. Stack them according to the selection.
8. Display the values
9. Stop the process

#### PROGRAM:

```
#include <stdio.h>

int predict (int pg[], int fr[], int n, int index,
             int frames)
{
    int r = -1, l = index;
    for (int i = 0; i < frames; i++)
    {
        int j;
        for (j = index; j < n; j++) {
            if (fr[i] == pg[j]) {
                if (j > l) {
                    l = j;
                    res = i;
                }
            }
        }
    }
}
```

```

        break;
    }
}
if (j == n)
    return i;
}
return (res == -1) ? 0 : res;
}

int main()
{
    int frames, n;
    printf("Enter no. of frames:");
    scanf("%d", &frames);
    printf("Enter no. of pages:");
    scanf("%d", &n);
    int pg[n];
    printf("Enter reference string:");
    for (int i=0; i<n; i++) {
        scanf("%d", &pg[i]);
    }
    int fr[frames];
    for (int i=0; i<frames; i++)
        fr[i] = -1;
    int pg_fault=0;

```

```
for (int i=0; i<n; i++) {
```

```
    int hit=0;
```

```
    for (int j=0; j<frames; j++)
```

```
    { if (frame[j] == pg[i]) {
```

```
        hit=1;
```

```
        break;
```

```
    }
```

```
    if (!hit) {
```

```
        int emp_ind=-1;
```

```
        for (int j=0; j<frames; j++) {
```

```
            if (tr[j] == -1) {
```

```
                emp_ind = j;
```

```
                break;
```

```
            }
```

```
        }
```

```
        if (emp_ind != -1) {
```

```
            tr[emp_ind] = pg[i];
```

```
        } else {
```

```
            int pos = predict (pg, tr, n, i+1, frames);
```

```
            tr[pos] = pg[i];
```

```
        }
```

```
        pg_fault++;
```

```
    }
```

~~printf("%d",~~

for (int j = 0; j < frames; j++) {

    printf("%d", fr[j]);

    printf("\n");

}

printf("\n Tot page Faults = %d\n",  
Pg-fault);

return 0;

}



Output:

Enter No. of frame : 3

Enter No. of page : 6

Enter reference string : 123241

1 2 3

1 2 3

1 2 3

1 2 3

1 4 3

1 4 3

Total Page Fault = 4

Result:

Hence the Optimal Page replacement is implemented using C program.