Ex. No.: 11c)
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## 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 the selection.
8. Display the values
9. Stop the process

**PROGRAM:**

```
# include < stdio.h>
int main ()
{
    int f, p, fa[10], pa[30), temp[10], f1, f2, f3,
i, j, k, pos, max, faults =0;
    printf (" Enter no. of frames ");
    scanf ("%d", &f);
    printf (" Enter the no. of pages");
    scanf ("%d", &p);
    printf (" Enter the reference string");
    for (i=0; i< p; i++)73
        { scanf ("%d", &pa[i]);
        }
```

```
for (i=0; i< ~~no~~ f ; i++)
   { fa[i]=-1;
   }
for (i=0; i<p; i++)
   {   flag1 = f2 = 0;
       for (j=0; j<f; j++)
         {   if (fa[j]==pa[i])
               {     f1 = f2 = 1;
                     break;
               }
         }
       if (f1==0)
         {   for (j=0; j<f; j++)
               {   if (fa[j]==-1)
                     {
                        faults++;
                        fa[j]= pa[i];
                        f2 = 1;
                        break;
                     }
               }
         }
       if (f2==0)
          {  f3 =0;
             for (j=0; j<f; j++)
               {  temp[j]=-1;
                  for (k=i+1; k<p; k++)
                    {
```

```
        if (fa[j] == pa[k])
        {    temp [j] = k;
             break;
        }
    }
}
for (j=0 ; j< nf ; j++)
{   if (temp [j] == -1)
    {  pos = j;
       f3 = 1;
       break;
    }
}
if (f3==0)
{ max = temp [0];
  pos =0;
  for (j=1 ; j < f ; j++)
  { if (temp [i] > max)
    {  max = temp [i];
       pos = j;
}   }   }

frames [pos] = pa (i);
faults++;
}
```

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```
printf("\n");
for(j=0;j<f;j++)
 { printf("%d\t",fa[j]);
 }
}
printf("\n\n =%d", faults);
return;
}
```

**Output:**

```
3
10
2  3 4 2 1  3  7 5  4 3

2 -1 -1

2   3 -1
2   3   4
2   3  4
1   3  4
1   3  4
7  3   4
5  3   4
5  3   4
5   3  4
```

Page fault = ~~8~~ 4

**Result:** [illegible]

Thus the code for optimal page replacement algorithm is executed successfully.