CS23431 - OPERATING SYSTEM

EXP 11(C) - OPTIMAL PAGE REPLACEMENT

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PROGRAM:

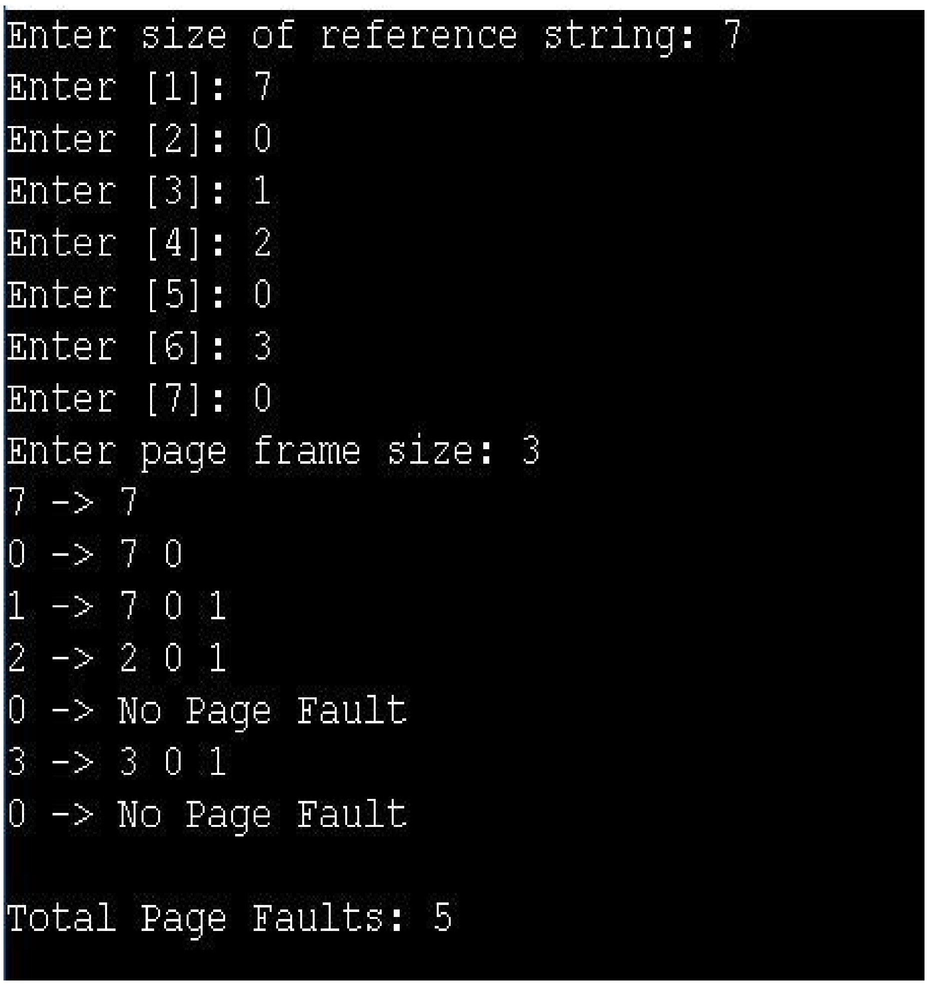
```
#include <stdio.h>
int findreplacementindex(int n,int frame_size,int page[],int mem[],int current)
{
   int ind[frame_size];
   for(int i=0;i<frame_size;i++)
   {
     ind[i]=-1;
     for(int j=current+1;j<n;j++)
      {
         if(mem[i]==page[j])
         {
            ind[i]=j; break;
         }
      }
   }
   int dist=-1,reqind=-1;;
   for(int i=0;i<frame_size;i++)
   {
    if(ind[i]==-1)
      {
         return i;
      }
     else if(ind[i]>dist)
      {
            dist=ind[i]; reqind=i;
      }
   }
   return reqind;
}
int main() {
int n,frame_size,front=0,count=0,page_faults=0; printf("Enter
  size of reference string: "); scanf("%d",&n);
int page[n];
for(int i=0;i<n;i++)
{
printf("Enter [%d]: ",i+1);
scanf("%d",&page[i]);
}
printf("Enter page frame size: "); scanf("%d",&frame_size);
int mem[frame_size];
for (int i = 0; i < n; i++) { int found = 0;
for (int j = 0; j < count; j++) { if (mem[j] ==
  page[i]) {
found = 1; break;
}
}

printf("%d -> ", page[i]); int f=1;
if (!found) {
if (count < frame_size) { mem[count++] =
  page[i];
  } else {
  int index=findreplacementindex(n,frame_size,page,mem,i); mem[index]=page[i];
  }
  page_faults++;
  }
  else
  {
  f=0;
  printf("No Page Fault ");
  }
  if(f)
  {
for (int j = 0; j < count; j++) {
  printf("%d ", mem[j]);
  }
  }
  printf("\n");
  }

  printf("\nTotal Page Faults: %d\n", page_faults);

  return 0;
  }
```

OUTPUT



```
Enter size of reference string: 7
Enter [1]: 7
Enter [2]: 0
Enter [3]: 1
Enter [4]: 2
Enter [5]: 0
Enter [6]: 3
Enter [7]: 0
Enter page frame size: 3
7 -> 7
0 -> 7 0
1 -> 7 0 1
2 -> 2 0 1
0 -> No Page Fault
3 -> 3 0 1
0 -> No Page Fault

Total Page Faults: 5
```