Write the simulation program to implement demand paging and show the page scheduling and total number of page faults for the following given page reference string. Give input n as the number of memory frames.
Reference String :7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2
i. Implement LRU

```
#include<stdio.h>
#define MAX 20

int frames[MAX],ref[MAX],mem[MAX][MAX],faults,
sp,m,n,time[MAX];
void accept()
{
int i;
printf("Enter no.of frames:");
scanf("%d", &n);
printf("Enter no.of references:");
scanf("%d", &m);
printf("Enter reference string:\n");
for(i=0;i<m;i++)
{
printf("[%d]=",i);
scanf("%d",&ref[i]);
}
}
void disp()
{
int i,j;
for(i=0;i<m;i++)
printf("%3d",ref[i]);
printf("\n\n");
for(i=0;i<n;i++)
{
for(j=0;j<m;j++)
{
if(mem[i][j])
printf("%3d",mem[i][j]);
else
printf(" ");
}
printf("\n");
}
printf("Total Page Faults: %d\n",faults);
}
int search(int pno)
{
int i;
for(i=0;i<n;i++)
{

if(frames[i]==pno)
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```
return i;
}
return -1;
}
int get_lru()
{
int i,min_i,min=9999;
for(i=0;i<n;i++)
{
if(time[i]<min)
{
min = time[i];
min_i = i;
}
}
return min_i;
}

void lru()
{
int i,j,k;
for(i=0;i<m && sp<n;i++)
{
k=search(ref[i]);
if(k==-1)
{
frames[sp]=ref[i];
time[sp]=i;
faults++;
sp++;
for(j=0;j<n;j++)
mem[j][i]=frames[j];
}
else
time[k]=i;
}
for(;i<m;i++)
{
k = search(ref[i]);
if(k==-1)
{
sp = get_lru();

frames[sp] = ref[i];
time[sp] = i;
faults++;
for(j=0;j<n;j++)
mem[j][i] = frames[j];
}
else
time[k]=i;
}
```

```
}

int main()
{
accept();
lru();
disp();
return 0;
}
```