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PROGRAM : 09

AIM : Design, develop and implement a C/C++/Java program to implement page replacement algorithms LRU and FIFO. Assume suitable input required to demonstrate the results.

CODE:

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
void fifo(char [], char[], int, int );
void lru(char[], char[], int, int);
int main()
{
  int ch, choice = 1, i, l, f;
  char frame[10], s[25];
  printf ("\n Enter the number of frames :\n");
  scanf ("%d", &f);
  printf ("\n Enter the string :\n");
  scanf ("%s", s);
  l = strlen(s);
  for(i=0; i<f; i++)
      frame[i] = -1 ;
   do
   {
    printf ("\n1: FIFO\n2: LRU\n3: Exit\n");
    printf ("\n Enter your choice :\n");
    scanf("%d", &ch);
    switch (ch)
    {
      case 1 :
            for(i=0;i<f;i++)
                frame[i] = -1;
            fifo(s,frame,l,f);
            break;
      case 2:
            for(i=0;i<f;i++)
                frame[i] = -1
            lru(s,frame,l,f);
            break;
      case 3 :
            exit(0);
      }
   printf("\n\n\t Do you want to continue? If yes press 1,
         else press 0:");
    scanf("%d",&choice);
   }
   while(choice ==1);
    return(0);
  }
void fifo(char s[], char frame[], int l, int f)
{
   int i, j=0, k, flag=0, count=0;
   printf("\n\t PAGE\t FRAMES\t FAULTS");
   for(i=0;i<l;i++)
```

```
{
 for (k=0;k<f;k++)
   {
     if(frame[k] == s[i])
          flag =1;
   }
 if(flag ==0)
  {
   printf("\n\t%c\t", s[i]);
   frame[j] = s[i];
   j++;
   for(k=0;k<f;k++)
        printf("%c ", frame[k]);
   printf("\tFault %d", count);
   count++;
  }
 else
  {
   flag =0;
   printf("\n\t%c\t", s[i]);
   for(k=0; k<f; k++)
    {
      printf("%c", frame[k]);
    }
    printf("\tHit");
   }
   if(j==f)
       j=0;
  }
}.
```

```
void lru (char s[], char frame[], int l, int f)
{
  int i, j = 0, k, m, flag = 0, count = 0, top = 0;
  printf("\n\t PAGE \t FRAMES \t FAULTS");
  for (i=0; i<l; i++)
   {
    for (k=0; k<f; k++)
     {
       if( frame[k] == s[i])
        {
          flag = 1;
          break;
        }
     }
    printf(" \n\t %c \t", s[i]);
   if (j != f && flag != 1)
    {
      frame [top] = s[i];
      j++;
     if (j != f)
         top++;
    }
 else
  {
    if (flag != 1)
     {
      for(k=0; k<top; k++)
          frame[k] = frame[k+1];
      frame [top] = s[i];
     }
   if (flag == 1)
     {
            for(m=k;m<top;m++)
                frame[m]=frame[m+1];
            frame[top]=s[i];
        }
    }
    for(k=0;k<f;k++)
    {
        printf(" %c",frame[k]);
    }
    if(flag==0)
    {
        printf("\tFault %d",count);
        count++;
    }
    else
        printf("\tHit ");
    flag=0;
    }
}.
```

OUTPUT:

```
Enter the number of frames :
3
Enter the string :
70120304230321201701

1: FIFO
2: LRU
3 : Exit

Enter your choice :
1
```

```
PAGE        FRAMES        FAULTS
7           7             Fault 0
0           70            Fault ●
1           701           Fault 2
2           20 1          Fault 3
0           20 1          Hit
3           231           Fault 4
0           230           Fault 5
4           430           Fault 6
2           420           Fault 7
3           423           Fault 8
0           023           Fault 9
3           023           Hit
2           023           Hit
1           013           Fault 10
2           012           Fault 11
0           012           Hit
1           012           Hit
7           712           Fault 12
0           712           Fault 13
1           712           Hit .

Do you want to continue? If yes press 1, else 0 :  1

1 : FIFO
2 : LRU
3 : Exit

Enter your choice :
2
PAGE        FRAMES        FAULTS .
7           7             Fault 0
0           70            Fault 1
1           701           Fault 2
2           012           Fault 3.
```

0	120	Hit
3	203	Fault 4
0	203	Hit .
4	304	Fault 5
2	042	Fault 6
3	423	Fault 7
0	230	Fault 8
3	203	Hit
2	032	Hit
1	321	Fault 9
2	812	Hit
0	120	Fault 10
1	201	Hit
7	017	Fault 11
0	170	Hit
1	701	Hit