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ADDERESS TRANSLATION USING PAGING

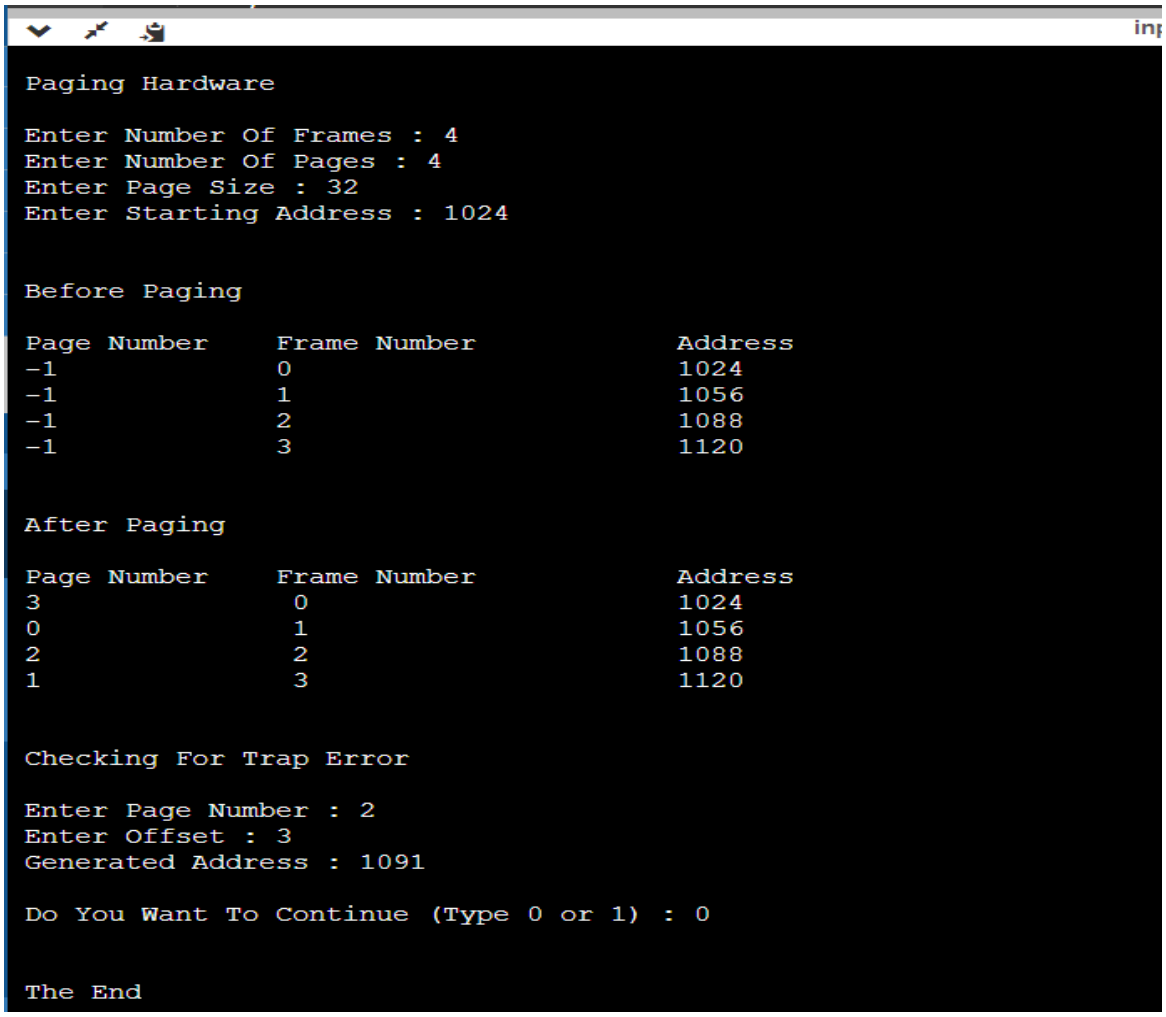
```
#include <stdbool.h>
#include <stdio.h>
#include <stdlib.h>
#include<time.h>
#include <unistd.h>

int main()
{
        int no_frames;
        int no_pages;
        int page_size;
        int start_address;
        int address[100];
        int alloc[100];
        int page_address[100];

        printf("\n\n Paging Hardware \n\n");

        printf(" Enter Number Of Frames : ");

        scanf("%d",&no_frames);

        printf(" Enter Number Of Pages : ");

        scanf("%d",&no_pages);

        printf(" Enter Page Size : ");
```

```
scanf("%d",&page_size);

printf(" Enter Starting Address : ");

scanf("%d",&start_address);

printf("\n\n Before Paging \n\n");

printf(" Page Number \tFrame Number\t\tAddress \n");

for(int i = 0 ; i < no_frames ; i++)
{
	alloc[i] = -1;

	printf(" %d\t\t%d\t\t\t%d\n", alloc[i] , i , start_address);

	address[i] = start_address;

	start_address += page_size;
}

time_t t;

srand((unsigned)time(&t));

printf("\n\n After Paging \n\n");

printf(" Page Number \tFrame Number\t\tAddress \n");

bool occupied[100];

for(int i = 0 ; i < 100 ; i++)
{
	occupied[i]  = false;
```

```
            page_address[i] = -1;
        }
        for(int i = 0;i<no_pages;i++)
        {
            int r  = rand() % no_frames;

            int counter = 0;

            while(occupied[r % no_frames] == true && counter <
no_frames)
            {
                r = (r + 1) % no_frames;
                counter++;
            }
            if(counter==no_frames)
            {
                alloc[r] = -1;
                page_address[i] = -1;
            }
            else
            {
                alloc[r] = i;
                occupied[r] = true;
                page_address[i] = address[r];
            }
        }
        for(int i = 0; i < no_frames ; i++)
        {
            if (alloc[i] >= 0 )
            {
                printf(" %d\t\t %d\t\t\t%d\n", alloc[i] , i , address[i]);
            }
            else
            {
                printf(" %d\t\t%d\t\t\t%d\n", i , alloc[i] , address[i]);
```

```
		}
	}
	int choice = 1;

	while(choice == 1)
	{
		int no;
		int offset;
		printf("\n\n Checking For Trap Error \n\n");
		printf(" Enter Page Number : ");

		scanf("%d",&no);

		printf(" Enter Offset : ");

		scanf("%d",&offset);

		if((page_address[no] + offset >= page_address[no] +
page_size)|| page_address[no] == -1)
		{
			printf(" Trap Addressing Error \n\n");
		}
		else
		{
			printf(" Generated Address : %d \n\n" , page_address[no]
+ offset);
		}
		printf(" Do You Want To Continue (Type 0 or 1) : ");
		scanf("%d",&choice);
	}

	printf("\n\n The End \n\n");
	return 0;	}
```

OUTPUT:



```
Paging Hardware

Enter Number Of Frames : 4
Enter Number Of Pages : 4
Enter Page Size : 32
Enter Starting Address : 1024


Before Paging

Page Number     Frame Number            Address
-1              0                       1024
-1              1                       1056
-1              2                       1088
-1              3                       1120


After Paging

Page Number     Frame Number            Address
3                0                      1024
0                1                      1056
2                2                      1088
1                3                      1120


Checking For Trap Error

Enter Page Number : 2
Enter Offset : 3
Generated Address : 1091

Do You Want To Continue (Type 0 or 1) : 0


The End
```