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/*
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	33132 L9 Assignment 3
*/

#include<stdio.h>
#include<unistd.h>
#include<stdlib.h>
#include<pthread.h>
#include<string.h>
#include<malloc.h>
#define MAX 10
#define MAX_THREADS 10

int mat1[MAX][MAX],mat2[MAX][MAX],mat3[MAX][MAX];
int r1,r2,c1,c2;

void *Multiply(void *args)
{
	for (int i = 0; i < r1; i++)
	{
		for (int j = 0; j < c2; j++)
		{
			mat3[i][j]=0;
			for (int k = 0; k < c1; k++)
			{
		   mat3[i][j] += mat1[i][k] * mat2[k][j];
			}
		}
	}


}

int main()
{
	int i,j;
	printf("\nEnter the rows of matrix 1 :");
	scanf("%d",&r1);

	printf("\nEnter the columns of matrix 1 :");
	scanf("%d",&c1);

	printf("\nEnter the rows of matrix 2 : ");
	scanf("%d",&r2);

	if(c1 != r2){
		printf("\nMatrix multiplication is not possible!!");
		exit(0);
	}

	printf("\nEnter the columns of matrix 2 : ");
```

```
	scanf("%d",&c2);

	printf("\nEnter matrix 1 :\n");
	for(int i = 0; i < r1;i++){
		for(int j = 0; j < c1;j++){
			printf("Enter element matrix [%d][%d] :: ",i+1,j+1);
			scanf("%d",&mat1[i][j]);
		}
	}

	printf("\nEnter matrix 2	:\n");
	for(int i = 0; i < r2;i++){
		for(int j = 0; j < c2;j++){
			printf("Enter element matrix [%d][%d] :: ",i+1,j+1);
			scanf("%d",&mat2[i][j]);
		}
	}

	printf("The matrix 1 is \n");
	for(int i = 0; i < r1;i++){
		for(int j = 0; j < c1;j++){
			printf("%d\t",mat1[i][j]);
		}
		printf("\n");
	}
	printf("The matrix 2 is \n");
	for(int i = 0; i < r2;i++){
		for(int j = 0; j < c2;j++){
			printf("%d\t",mat2[i][j]);
		}
		printf("\n");
	}

	pthread_t threads[MAX_THREADS];

// Creating threads, each evaluating its own part
for (int i = 0; i < MAX_THREADS; i++) {
   int* result;
   pthread_create(&threads[i], NULL, Multiply, (void*)(result));
}
// joining and waiting for all threads to complete
	for (int i = 0; i < MAX_THREADS; i++)
   pthread_join(threads[i], NULL);

	printf("The multiplied matrix is \n");

	for(int i = 0; i < r1;i++){
		for(int j = 0; j < c2;j++){
			printf("%d\t",mat3[i][j]);
		}
		printf("\n");
	}
```

```
    return 0;

}
```

```
mihir@pop-os:~/TE/OS-lab/a3$ ./a3

Enter the rows of matrix 1 :2

Enter the columns of matrix 1 :3

Enter the rows of matrix 2 : 3

Enter the columns of matrix 2 : 2

Enter matrix 1 :
Enter element matrix [1][1] :: 1
Enter element matrix [1][2] :: 1
Enter element matrix [1][3] :: 1
Enter element matrix [2][1] :: 1
Enter element matrix [2][2] :: 1
Enter element matrix [2][3] :: 1

Enter matrix 2  :
Enter element matrix [1][1] :: 1
Enter element matrix [1][2] :: 1
Enter element matrix [2][1] :: 1
Enter element matrix [2][2] :: 1
Enter element matrix [3][1] :: 1
Enter element matrix [3][2] :: 1
The matrix 1 is
1       1       1
1       1       1
The matrix 2 is
1       1
1       1
1       1
The multiplied matrix is
3       3
3       3
mihir@pop-os:~/TE/OS-lab/a3$
```

```
mihir@pop-os:~/TE/OS-lab/a3$ ./a3

Enter the rows of matrix 1 :1

Enter the columns of matrix 1 :2

Enter the rows of matrix 2 : 3

Matrix multiplication is not possible!!mihir@pop-os:~/TE/OS-lab/a3$ ./a3

Enter the rows of matrix 1 :2

Enter the columns of matrix 1 :2

Enter the rows of matrix 2 : 2

Enter the columns of matrix 2 : 2

Enter matrix 1 :
Enter element matrix [1][1] :: 1
Enter element matrix [1][2] :: 1
Enter element matrix [2][1] :: 1
Enter element matrix [2][2] :: 1

Enter matrix 2  :
Enter element matrix [1][1] :: 2
Enter element matrix [1][2] :: 2
Enter element matrix [2][1] :: 2
Enter element matrix [2][2] :: 2
The matrix 1 is
1       1
1       1
The matrix 2 is
2       2
2       2
The multiplied matrix is
4       4
4       4
mihir@pop-os:~/TE/OS-lab/a3$
```