**12: LRU**

**import** java.util.\*;

**public** **class** LRU {

**public** **static** **void** main(String[] args) {

Scanner sc = **new** Scanner(System.***in***);

ArrayList<Integer> arr = **new** ArrayList<>();

**int** noofpages, capacity, hit = 0, fault = 0, index = 0;

**boolean** isFull = **false**;

**double** hitRatio, faultRatio;

System.***out***.print("Enter the number of pages you want to enter: ");

noofpages = sc.nextInt();

**int** pages[] = **new** **int**[noofpages];

**for** (**int** i = 0; i < noofpages; i++) {

pages[i] = sc.nextInt();

}

System.***out***.print("Enter the capacity of frame: ");

capacity = sc.nextInt();

**int** frame[] = **new** **int**[capacity];

**int** table[][] = **new** **int**[noofpages][capacity];

**for** (**int** i = 0; i < capacity; i++) {

frame[i] = -1;

}

System.***out***.println("----------------------------------------------------------------------");

**for** (**int** i = 0; i < noofpages; i++) {

**if** (arr.contains(pages[i])) {

arr.remove((Integer) pages[i]);

}

arr.add(pages[i]);

**int** search = -1;

**for** (**int** j = 0; j < capacity; j++) {

**if** (frame[j] == pages[i]) {

search = j;

hit++;

System.***out***.printf("%4s", "H");

**break**;

}

}

**if** (search == -1) {

**if** (isFull) {

**int** min\_loc = noofpages;

**for** (**int** j = 0; j < capacity; j++) {

**if** (arr.contains(frame[j])) {

**int** temp = arr.indexOf(frame[j]);

**if** (temp < min\_loc) {

min\_loc = temp;

index = j;

}

}

}

}

frame[index] = pages[i];

fault++;

System.***out***.printf("%4s", "F");

index++;

**if** (index == capacity) {

index = 0;

isFull = **true**;

}

}

System.*arraycopy*(frame, 0, table[i], 0, capacity);

}

System.***out***.println("\n----------------------------------------------------------------------");

**for** (**int** i = 0; i < capacity; i++) {

**for** (**int** j = 0; j < noofpages; j++)

System.***out***.printf("%3d ", table[j][i]);

System.***out***.println();

}

System.***out***.println("----------------------------------------------------------------------");

hitRatio = ((**double**) hit / noofpages) \* 100;

faultRatio = ((**double**) fault / noofpages) \* 100;

System.***out***.println("Page Fault: " + fault + "\nPage Hit: " + hit);

System.***out***.printf("Hit Ratio:%.2f \nFault Ratio:%.2f ", hitRatio, faultRatio);

sc.close();

}

}