**import** java.util.Scanner;

**public** **class** Optimalpr{

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

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

System.***out***.print("Enter the length of the reference string: ");

**int** refLength = scanner.nextInt();

System.***out***.print("Enter the number of frames: ");

**int** frames = scanner.nextInt();

**int**[] reference = **new** **int**[refLength];

**int**[] buffer = **new** **int**[frames];

**int** hit = 0, fault = 0;

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

buffer[i] = -1;

}

System.***out***.print("Enter the reference string: ");

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

reference[i] = scanner.nextInt();

}

System.***out***.print("Strings \t");

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

System.***out***.print("Frame " + (i + 1) + "\t\t");

}

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

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

**int** currentPage = reference[i];

**boolean** pageFound = **false**;

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

**if** (buffer[j] == currentPage) {

pageFound = **true**;

hit++;

**break**;

}

}

**if** (!pageFound) {

**int** replaceIndex = *getOptimalPageIndex*(buffer, reference, i);

buffer[replaceIndex] = currentPage;

fault++;

}

System.***out***.print(currentPage + "\t\t");

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

**if** (buffer[j] != -1) {

System.***out***.print(buffer[j] + "\t\t");

} **else** {

System.***out***.print("-\t\t");

}

}

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

}

System.***out***.println("\nTotal Hits: " + hit);

System.***out***.println("Total Faults: " + fault);

scanner.close();

}

**private** **static** **int** getOptimalPageIndex(**int**[] buffer, **int**[] reference, **int** currentIndex) {

**int** farthest = currentIndex;

**int** replaceIndex = 0;

**for** (**int** i = 0; i < buffer.length; i++) {

**int** j;

**for** (j = currentIndex + 1; j < reference.length; j++) {

**if** (buffer[i] == reference[j]) {

**if** (j > farthest) {

farthest = j;

replaceIndex = i;

}

**break**;

}

}

**if** (j == reference.length) {

**return** i;

}

}

**return** replaceIndex;

}

}

