TEMA 3

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import java.util.Scanner;

public class tema3 {
	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		System.out.println("Marimea matricii patratice n= ");
		int n = sc.nextInt();

		int[][] A = new int[n][n];
		System.out.println("Introduceti elementele matricei: ");
		for (int i=0; i<n; i++)
			for (int j=0; j<n; j++)
				A[i][j] = sc.nextInt();
		int m = (n%2==1)? n:n-1;
		int start = (n-m)/2;

		System.out.println("Matricea introdusa este:");
for (int i = 0; i < n; i++) {
  for (int j = 0; j < n; j++) {
    System.out.print(A[i][j] + " ");
  }
  System.out.println();
}

int sumaDiagPrincipala = 0, sumaDiagSecundara = 0;
for (int i = 0; i < n; i++) {
  sumaDiagPrincipala += A[i][i];
  sumaDiagSecundara += A[i][n - 1 - i];
}
System.out.println("Suma diagonalei principale: " + sumaDiagPrincipala);
System.out.println("Suma diagonalei secundare: " + sumaDiagSecundara);


		if(EsteMagica(A, start, m)) {
			int suma = sumaLinie(A, start, 0, m);
			System.out.println("Suma comuna: " +suma);
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                System.out.println("Matrice magica partiala");
        }else {
                System.out.println("Matrice nemagica");
        }
                sc.close();
}

static boolean EsteMagica (int A[][], int start, int m) {
        int sumaReferinta = sumaLinie(A, start, 0, m);



        for(int i=0; i<m; i++){
                if(sumaLinie(A, start, i, m) != sumaReferinta)
                                return false;
        }

        for(int j=0; j<m; j++){
                if(sumaColoana(A, start, j, m) != sumaReferinta)
                        return false;
        }

        if(sumaDiagonalaPrinc(A, start, m) != sumaReferinta)
                return false;

        if(sumaDiagoanlaSec(A, start, m) != sumaReferinta)
                return false;

        return true;
}

static int sumaLinie(int[][]A, int start, int i, int m) {
        int s = 0;
        for(int j=0; j<m; j++)
                s +=A[start+i][start+j];
        return s;
}
```

```
	static int sumaColoana(int[][]A, int start, int j, int m) {
		int s = 0;
		for(int i=0; i<m; i++)
			s += A[start+i][start+j];
		return s;

	}

	static int sumaDiagonalaPrinc(int[][]A, int start, int m) {
		int s =0;
		for(int i = 0; i<m; i++)
			s +=A[start+i][start+i];
		return s;
	}

	static int sumaDiagoanlaSec(int[][]A, int start, int m) {
		int s = 0;
		for(int i =0; i<m; i++)
			s += A[start+i][start+m-1-1];
		return s;
	}

}
```