public class RangeQueries

{

static int k = 16;

static int N = 100000;

static long table[][] = new long[N][k + 1];

static void buildSparseTable(int arr[], int n)

{

for (int i = 0; i < n; i++)

table[i][0] = arr[i];

for (int j = 1; j <= k; j++)

for (int i = 0; i <= n - (1 << j); i++)

table[i][j] = table[i][j - 1] + table[i + (1 << (j - 1))][j - 1];

}

static long query(int L, int R)

{

long answer = 0;

for (int j = k; j >= 0; j--)

{

if (L + (1 << j) - 1 <= R)

{

answer = answer + table[L][j];

L += 1 << j;

}

}

return answer;

}

public static void main(String args[])

{

int arr[] = { 3, 7, 2, 5, 8, 9 };

int n = arr.length;

buildSparseTable(arr, n);

System.out.println(query(0, 5));

System.out.println(query(3, 5));

System.out.println(query(2, 4));

}

}