**package** com;

**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));

}

}