

[Expand All](#)[Collapse All](#)

## General

### ▼ I'm using IntelliJ. Which project folder should I use?

We provide an IntelliJ project folder for each assignment. Click the *Project* at the top of the page to download.

## Generalized harmonic numbers

### ▼ Can I use a while loop instead of a for loop?

No. If the assignment specification says to use a for loop, then use a for loop!

### ▼ What's the Java operator for exponentiation?

Sorry, Java (and many other programming languages) reserve the `^` operator for *exclusive or*, not exponentiation. Use `Math.pow(x, y)`.

## Band matrices

### ▼ Can I use arrays?

No. On this assignment, arrays are neither permitted nor necessary.

### ▼ How can I determine the distance of element $(i, j)$ from the main diagonal?

*Hint:* use `Math.abs()`.

## Random walk

### ▼ How can I generate a random direction?

Use `Math.random()` and the idiom from lecture to generate a random integer between 0 and 3.

### ▼ What is the Manhattan distance between two points $(x_0, y_0)$ and $(x_1, y_1)$ ?

It's the sum of the absolute differences of their Cartesian coordinates:  $|x_0 - x_1| + |y_0 - y_1|$ .

## Random walk statistics

### ▼ My program takes a long time when $r$ and trials are large. Why?

It's doing a lot of computation. For example, when  $r = 160$  and trials = 100,000, the Monte Carlo simulation performs more than 1.5 billion steps (100,000 random walks, with each random walk averaging more than 15,000 steps).