Data Science Career Track: Technical Skills Survey

Overview and sample questions

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We're glad you're excited about Springboard's Data Science Career Track!

This document serves to provide more information about our *technical skills survey*. The *skills survey* is a major component in our admissions process, and is designed to screen candidates for the skills necessary to be successful throughout the Career Track.

Below you'll find an overview of what is assessed in the survey, and you can review sample topics and mock questions for each of the subject areas tested.

How the skills assessment works

To enroll in the Data Science Career Track, you'll start by filling out an initial application form; this should take ~10-15 mins and can be found here.

Following your application, you'll be invited to take our *technical skills survey*. The assessment is designed to be completed in one session, and typically takes students anywhere from 30 to 90 minutes.

The skills survey is comprised of two sections: 1) *Statistics* and 2) *Programming*.

1) **Statistics** – The statistics section tests for proficiency at roughly the high school graduate level. You'll be asked 10 questions and will need to answer 7 or more correctly to pass.

2) **Programming** – The programming section consists of two problems, which can be solved using any programming language (i.e., Python, R, Java, C++). All code will be reviewed by a real human—one of our admissions representatives—to examine individual skills and ensure proper evaluation.

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Statistics

The first portion of the assessment will test for proficiency in statistics. You should expect to see questions on any of the following topics:

(Please note, the following subject areas are illustrative, and you may see topic areas for questions including, but not limited, to:)

Probability – *classical probability; conditional probability; independence; and Bayes' Theorem*

Descriptive Statistics – *mean, median, mode, standard deviation; probability distributions; uniform, normal (Gaussian) distributions*

Basic Visualizations – *histograms, bar charts; scatter plots*

Sample statistics questions

The following are sample questions demonstrating relative *skills survey* difficulty:

1. What is the statistical name for a bell curve?
2. Your office parking lot has a probability of being occupied of 1/3. You happen to find it unoccupied for nine consecutive days. What are the chances that you find it empty on the 10th day as well?
3. What is the median for the following set of data? *10, 20, 30, 40, 50, 60*.
4. A box contains one of each of the bills: *$1, $5, $10, $20, $50, and $100*. If you randomly draw three bills, then what is the probability that the three bills add to *$75?*
5. If you knew two of the answers to a multiple choice question were definitely incorrect, but randomly guessed between the other two, what is the probability that you are correct?

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Programming

The second portion of the *skills survey* will test for programming proficiency in any language (i.e., Python, R, Java, C++). Though the *technical skills survey* accepts any language, the Data Science Career Track course will be Python-based. It's OK to not have Python experience when starting, though you will need to pick it up during the early sections of course.

You should expect to see questions on any of the following topics:

(Please note, the following programming concepts are illustrative. You may need prior understanding and practice with concepts including but not limited to:)

Programming Concepts – *loops: for and while loops; conditionals; if-then-else statements; arithmetic and boolean operators; input/output from files and console; string operations; functions*

Data Structures– *lists; hash tables (dictionaries); stacks*

Sample programming problems

The following are sample questions demonstrating relative *skills survey* difficulty:

1) Pig Latin

You are given a piece of English text on a single line. Write a program that translates the text to Pig Latin. English is translated to Pig Latin by taking the first letter of every word, moving it to the end of the word, and adding "ay."

Assumptions

1. All letters are lowercase
2. Each word is separated by a single space
3. Numbers remain unchanged
4. There are no punctuation marks to worry about

Example

Input:
"the 2 quick brown foxes"

Output:
"hetay 2 uickqay rownbay oxesfay"

2) Max Difference

You're given a sequence of integers on a single line via standard input, each separated by a single space. Print the maximum difference (in absolute value) between any two numbers in the sequence on a single line on standard output.

Assumptions

1. Each number is separated by a single space.
2. The numbers can be positive, zero, or negative.

Example

Input:		*Output:*
1 9 2 -7 10 4 3		17

Explanation

The largest absolute difference between any two input numbers is |-7-10| = 17.

HackerRank coding environment

Some HackerRank challenges require you to read input from stdin (standard input) and write output to stdout (standard output). If you are unfamiliar with these objects, you can check out this tutorial that walks through a sample question in the HackerRank environment.

What to do now

Think you might be ready?

Go ahead and dive in!

We encourage everyone who is interested to take the *technical skills survey* if they feel they *might* be able to pass. If you don't pass on your first try, no stress, you're always able to apply again for a future cohort after brushing up on your skills with no negative consequences.

You can start your application here.

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Not yet ready or need more practice?

No problem!

We have created a best-in-class Data Science Career Track Prep Course that is specifically designed to teach you all the skills needed to pass our *technical skills survey*.

Our prep course is designed both for people with NO prior programming experience and those looking for a quick refresher. In the course, which takes 4-6 weeks at 10-15 hours /week, you'll learn the necessary Python skills to succeed in the full Data Science Career Track.

The prep course is also useful if you already know Python and would like to practice your skills, complete a sample data science mini-project, and/or test out the Springboard experience.

Have more questions?

We would love to talk to you!

Feel free to reach out to our admissions team at DSCinquiry@springboard.com and we would be more than happy to talk through your questions and help you figure out which path is best for you!