

WE ENJOYED GETTING TO KNOW YOU

WHAT NOW?

DEV CHALLENGE

You don't need to convince us that you know your stuff, but we want to place you at the correct level so that you can thrive from the outset. We want to be respectful of your time, so you have one of two options: 1) take our dev challenge OR 2) bring your own code

YES OR NO

If you don't get the job, glean insights from the experience and use them to propel yourself forward. We will gladly offer feedback at your request. If you are successful in the technical interview we will make you a formal job offer.

SLEEP ON IT

Take a few days to consider our offer before accepting or declining it. Chat to your family and contact the hiring manager if you need clarity on any aspect of the offer.

WELCOME

On your first day we will help you feel at home and introduce you to your career coach and project team. After a company orientation you will have the opportunity to get settled at your workstation, enjoy a delicious lunch with your teammates, and complete some important HR paperwork.

TECH INTERVIEW

Bring your completed dev challenge or your own code to an in-person interview at our offices, where you will have the opportunity to show us your coding skills, problem-solving abilities, and personality. It is not to trick you with riddles, brain teasers, or impossible questions.

JOB OFFER

Your formal job offer will be based on your experience and skill level. The offer will outline your Cost to Company breakdown and any deductions for PAYE, UIF, Pension and Medical Aid, as well as the other potential wealth creation mechanisms available to long-serving Singular employees.

OFFER ACCEPTANCE

If you decide not to accept our offer, let us know as soon as possible. If you decide to join us, we'd be thrilled. Make it official by signing the job offer document and returning it to us.

GET STUCK IN

Once you are orientated with the company and your project, your career coach and project lead will discuss your role and your career goals and ambitions. Your career coach will walk with you on your chosen Singular career path and help you identify opportunities to grow. The rest is up to you.



Option A

TAKE-HOME CHALLENGE

STARSHIP

You are the captain of a starship. You have been tasked with finding and colonizing habitable planets in your galaxy.

Your home world is located at these coordinates:

123.123.99.1 X & 098.098.11.1 Y & 456.456.99.9 Z

Your coordinate system ranges from 000.000.00.0 to 999.999.99.9, and you live in a three-dimensional universe.

- 0 Design and code an algorithm to generate a new universe within the bounds of the coordinate system.
- 1 Design and code an algorithm to populate your universe, by randomly generating 15 000 locations that reside at a coordinate. Each of these locations must be randomly marked as a planet or a very hungry space monster. Space monsters eat starships and should be avoided at all costs.
 - Each of these coordinates marked as a planet must be randomly marked as habitable or not.
 - Each Habitable planet must have a surface area randomly ranging from 1 million to 100 million square kilometers.
 - In order to inhabit a planet, you have to colonize more than 50% of its surface.
 - Colonization takes place at exactly 0.043 seconds per square kilometer.
 - Due to the strange construction of the star system you live in, travel time between any planet and its immediate neighbor is always 10 minutes, except if the neighbor is a space monster, in which case travel time doubles because you have to dodge the monster.

Write the results to a .txt file in a format of your choosing. Please include an explanation of the file format.

- 2 Design and code an algorithm to read the file created in step 1 which will:
 - Identify the planets you have to travel to and colonize to achieve the largest amount of colonized space within a 24-hour period.
 - Optimize your flight plan to avoid space monsters and non-habitable planets, visiting the largest amount of habitable planets, that you are able to colonize, in the 24 hour period.
- 3 Create a report (on-screen or file) that explains the flight plan, which route was taken, and how much surface area was colonized in the 24 hour period.

Use comments in your code to explain your thought process and state any assumptions made. You may use any IDE and programming language to complete your solution.

TIPS:

- Make sure you read and understand the challenge 100% before you start coding.
- Good design will be valued more than absolute output correctness.
- Code efficiency is important.
- Comment your code.
- If you don't understand part of the challenge, read it again. If you still do not understand, reach out to us.
- Have fun!

GOOD LUCK, CAPTAIN!

Option B

BRING YOUR OWN CODE

SHOWCASE

Show us your programming portfolio. Demonstrate your coding skills through personal projects. Describe the context of your projects(s): how they integrate with other libraries or tools. Let's dig into the source code together. Alternatively, take us through your GitHub repository and show us that you can write readable and maintainable code.