Software Development Engineer in Test

Thank you for your interest in this position. The following pages contain a number of questions and assignments that we would like you to work on. You have 2 days to complete. The time spent depends very much on you, but we believe that a good result can be produced in approx. 2 hours.

We are very much looking forward to your response. Should you have questions please don’t hesitate to get back to us thru your recruiter.

On behalf of Unity Technologies

Thomas Petersen  
QA Director

# Questionnaire

1. What accomplishment are you most proud of and why?
2. Why do you want to work for Unity?
3. What are the boundary conditions of log(x)?
4. You are given a function, f(x), which is storing a number, N, between 1 and 1024. When you call the function it will return:
   1. -1 if x<N
   2. 1 if x>N
   3. 0 if x == N

What is the maximum number of guesses you would **need** to determine the value of N?

1. How many bugs can you release a product with?
2. What is the difference between an interface and a delegate? What do they have in common? When would you use one over the other?

# Assignment 1: Car building

You have been given the task of building a car. The customer has – by himself – made the following diagram:   
  
The car must always have:

* Exactly one engine
* Exactly one carburetor
* One or more wheels

Do you spot any obvious problems? How does the design react to change? Can we unit test it?

# Assignment 2: Linked Lists

Write a function that inserts an integer into a linked list. The list must always be sorted in ascending order. Provide automated tests.

Use whatever programming language you prefer and attach the answer to this assignment. Do not use any utility classes.

# Assignment 3: Fraction Calculator

You have been given the task of building a fraction calculator. The following requirements have been given:

1. All fractions are represented in the form of Numerator and Denominator, including results.
2. Addition
3. Subtraction
4. Multiplication
5. Division
6. It is expected to throw correct exceptions.

Build the calculator in whatever programming language you prefer and attach it to this assignment. Provide automated tests.