

INFO 102 Lab 3: Hardware, low-level and high-level programming languages

Your name: Name: _____ Net ID: _____

The name of your partner: Name: _____ Net ID: _____

Please work with a partner to check your individual work, but turn in your own worksheet.

When it's your turn and if it's available, check out the old disassembled computers and identify the RAM, disc, and processor. Is it a hard disc or a SSD?

Order from the fastest language to the slowest language:

C
Machine code
Java
Assembly
Python

Which of these languages are Turing Complete?

What are some example applications of each of the languages we learned about: C, Java, Python?

C:

Java:

Python:

What are at least four factors you should consider when choosing a programming language?

Imagine you are designing cars that are able to navigate steep terrain. Use your **abstraction** skills to think of three characteristics of cars that may impact the ability to navigate steep inclines and declines.

Go to https://rednuht.org/genetic_cars_2/ to check out a genetic algorithm for building new shapes of cars. Watch the genetic algorithm through a few generations. I suggest you increase the Mutation Rate to 30%.

Look at the **Genome** section near the bottom of the website. Do any of your characteristics match what the genetic algorithm's designer chose as important characteristics?

Go to <https://www.tiobe.com/tiobe-index/>

Read the **introductory paragraphs** and answer the following questions:

What language is the most popular in small embedded systems?

What paradigm shifts have contributed to C#'s rise in popularity?

Look at the **graph of the TIOBE Community Index** and answer the following questions:

What language has grown the most since 2020?

Which language(s) have decreased the most since 2020?

Go to <https://niklas-heer.github.io/speed-comparison/>

Look at the **table** of time that each language took to complete the task.

How many times faster is C than Java (use the median values)?

How many times faster is C than Python (use the median values)?

Open the code comparisons linked from the labs part of the course website

What similarities and differences do you see among the programs?

In your opinion, do you think one programming language is easier to understand than the others?

Programming in your life!

What might be your future career?

What **programming language(s)** might you use in your future career and **why**? Feel free to Google search for info (e.g., programming languages used in marketing). You have to choose at least one language!

When you're done, check out with a TA or CA, and hand over this completed worksheet.

Bye!