LABORATORY REPORT #4
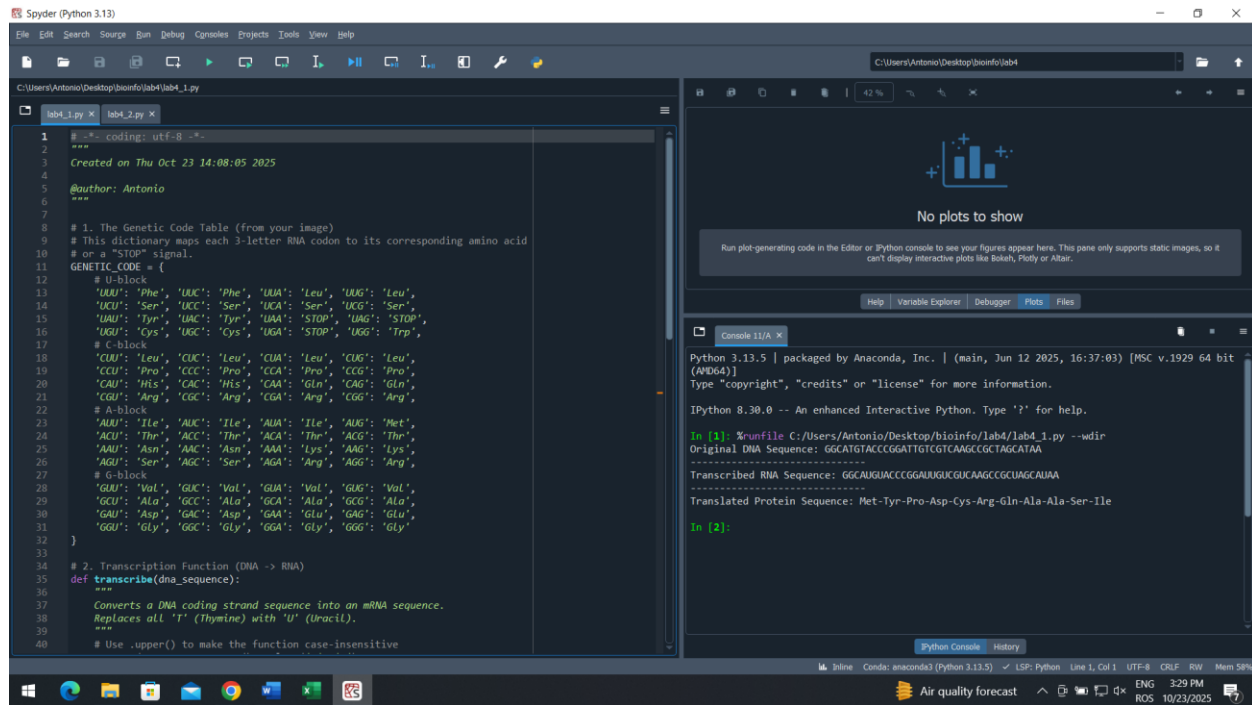
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Bioinformatics, 4th year 1st semester, 2025-2026

lab4_1.py

lab2_2.cpp

%runfile C:/Users/Antonio/Desktop/bioinfo/lab4/lab4_2.py --wdir

Parsing covid.fasta...

Parsing influenza.fasta...

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GENOME ANALYSIS CONSOLE OUTPUT

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--- Common Codons in Top 10 of Both Genomes ---

Codon | COVID-19 Count | Influenza Count

Codon	COVID-19 Count	Influenza Count
AAA	303	37
AGA	277	36
AAU	260	20

TOP 3 AMINO ACIDS (COVID-19)

1. Leu: 886 occurrences

2. Ser: 810 occurrences

3. Thr: 679 occurrences

TOP 3 AMINO ACIDS (Influenza)

1. Val: 66 occurrences

2. Arg: 64 occurrences

3. Ser: 63 occurrences

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STATIC FOOD RECOMMENDATION (Pre-loaded)

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The top amino acids from both genomes are: Arg, Leu, Ser, Thr, Val.

Here is a breakdown of those amino acids and a general list of

foods that are low in protein (and thus low in these amino acids).

--- Notes on Top Amino Acids ---

* Arginine: A conditionally-essential amino acid. Abundant in nuts, seeds, and meats. Dairy is a source, but generally lower than nuts.

* Leucine: An essential amino acid. Found in high-protein foods (meat, dairy, soy). Some grains like corn are lower in leucine.

* Serine: A non-essential amino acid, meaning the body can produce it. It's abundant in many foods.

* Threonine: An essential amino acid. Often found in high-protein sources. Grains like wheat and rice can be lower in threonine.

* Valine: An essential amino acid. Found in high-protein foods, soy, and peanuts.

--- General Low-Protein Food Categories ---

To avoid all these amino acids, you would seek low-protein foods:

Fats and Oils (Typically protein-free):

  - Olive oil, coconut oil, vegetable oils

  - Butter, margarine, mayonnaise

Sugars and Simple Starches (Primarily carbohydrates):

  - Table sugar, corn-starch, honey, maple syrup

  - Sorbets, hard candies, jams, jellies

Certain Fruits and Vegetables (Very low in protein):

  - Apples, grapes, berries

  - Cucumber, celery, lettuce, bell peppers, carrots

Beverages:

  - Water, coffee, tea (without milk/cream)

  - Most fruit juices (apple, grape)

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Generating charts...

Please close the chart windows to exit the program.