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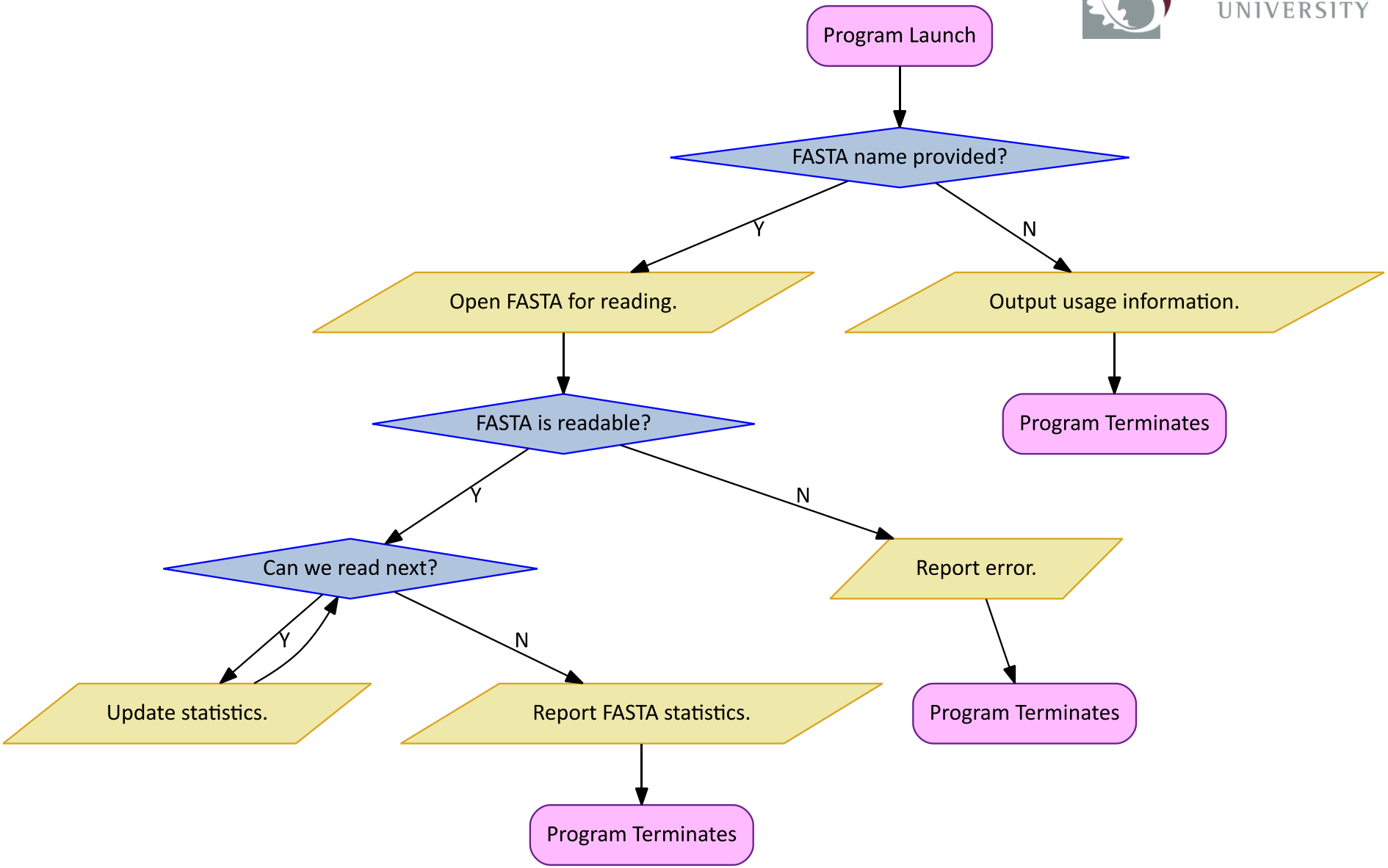
Bioinformatics language selection

- Java: I need to run on many platforms.
- C#: I want a polished Windows tool.
- C++: I need it to run really fast.
- Fortran: I am using fast, ancient libraries.
- R: I am a biostatistician.
- Perl: I need to write this very quickly.
- Python: I believe “Big Data” is a thing.

Any of these languages will empower you to do bioinformatics!

Python superpowers

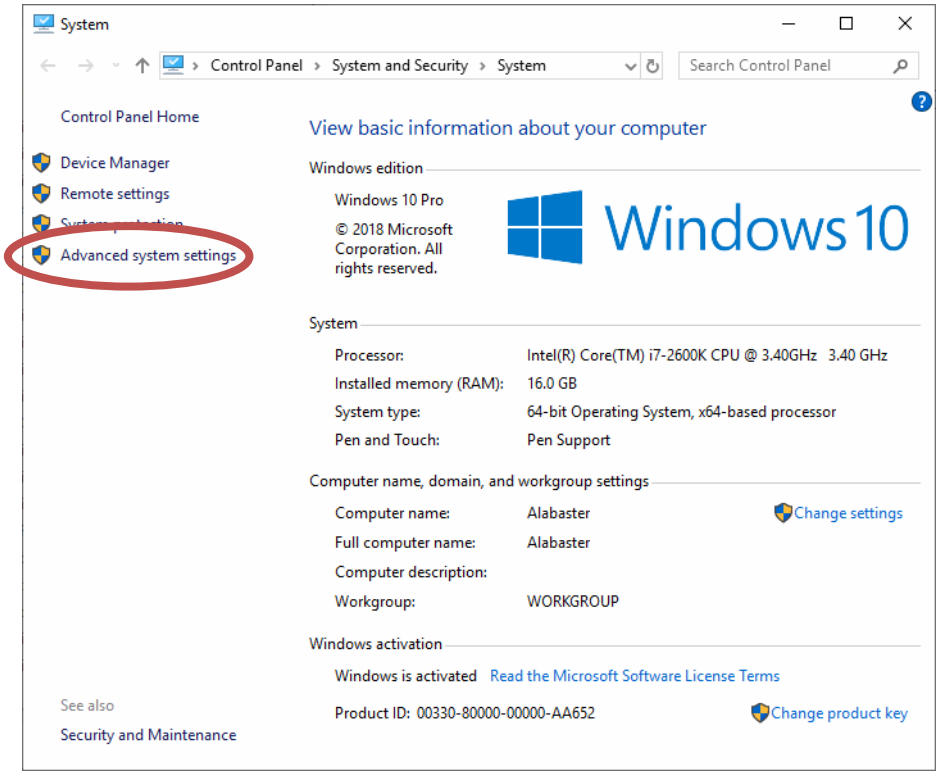
- Relies on interpreter for execution
- Emphasizes code readability
- Ditches curly braces { }
- Allows JIT compilation via PyPy
- Supports bioinformatics / data science through many advanced libraries

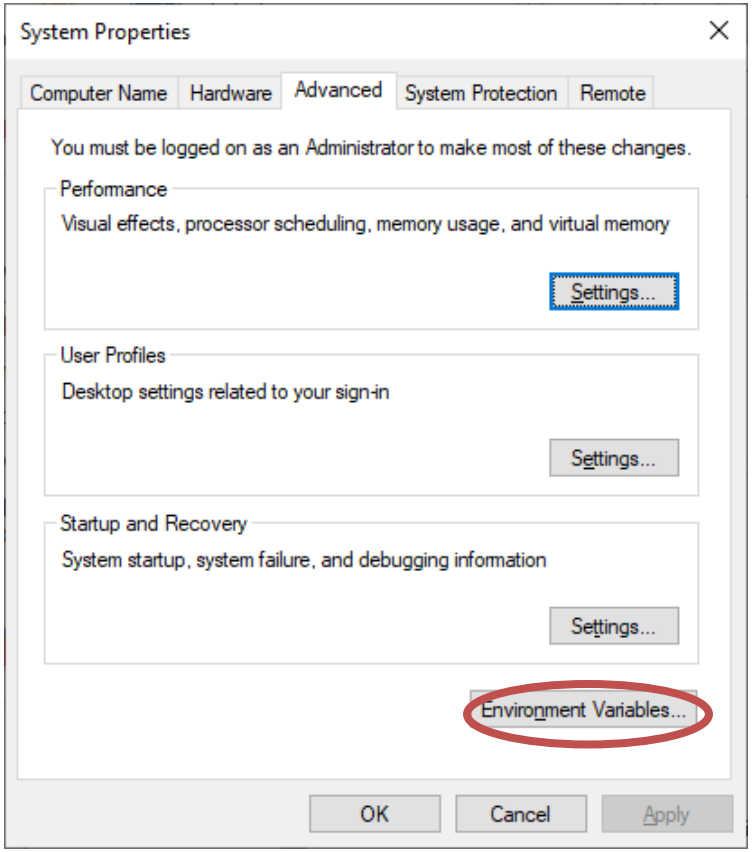


FASTA sniffer

Setting your system Path (Windows)

In Windows Explorer, right-click
"My Computer" and select properties.





Altering your PATH to include Python will save you from looking for it each time!

Function example

```
# Euclidean Distance
import math

def Euclidean (x1, y1, x2, y2):
    xdiff=x1-x2
    ydiff=y1-y2
    return (math.sqrt(xdiff*xdiff+ydiff*ydiff))

print(Euclidean(2,2,5,6))
print(Euclidean(2,2,7,14))
```

A right triangle with sides of 3 and 4 has a hypotenuse of 5.

Method example

```
# String method example

TestString1 = "Lorem ipsum dolor sit amet"

TestString2 = "quis nostrud exercitation"

print(TestString1.find("ipsum"))

print(TestString2.find("ipsum"))
```

A “-1” return value means the query sequence was not found.

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Conditionals: Choosing your path

```
# Simple conditional example
number = 3
if number > 0:
    print("Positive!")
else:
    print("Negative or zero!")

# Compound conditional example
if number > 0:
    print("Positive!")
elif number < 0:
    print("Negative!")
else:
    print("Zero!")
```

What numbers would cause these to produce different results?