

```

import scipy.constants as _sc
import numpy as np

# solar mass, radius, luminosity
Msun = 1.98848e30 # kg
Rsun = 6.957e8 # m
Lsun = 3.828e26 # W

#print("The Mean Molecular Weight for\
# interstellar gas is {:.5}".format(mue_gas))

```

```

if __name__ == "__main__":

```

## SNAKESHIT

A Short Musical

constants = [ Book, Music, and Lyrics by D. Q. Pham

```

    ("solar mass", Msun, "kg"),
    ("solar radius", Rsun, "m"),
    ("solar luminosity", Lsun, "W"),
    ("gravitational constant", G, "m**3 s**-2 kg**-1"),
    ("Planck constant", h, "J s"),
    ("Planck constant, reduced", hbar, "J s"),
    ("electron mass", m_e, "kg"),
    ("proton mass", m_p, "kg"),
    ("neutron mass", m_n, "kg"),
    ("atomic mass unit", m_u, "kg"),
    ("speed of light", c, "m s**-1"),
    ("Boltzmann constant", k, "J K**-1"),
    ("parsec", pc, "m"),
    ("astronomical unit", au, "m"),
    ("year", year, "s"),

```

© D. Q. Pham ("Stefan-Boltzmann constant", sigmaSB, "W m\*\*-2 K\*\*-4")

### Cast of Characters

<u>UNUK:</u>	WOC, mezzo-soprano, an astronomy student who does not get Python.
<u>GUDJA:</u>	Woman, soprano, an astronomy professor who brings Python into an everyday language.
<u>MARFIK:</u>	Man, tenor, a student who understands Python.
<u>ALYA:</u>	Woman, alto, a student who understands Python.
<u>YED:</u>	Man, bass, a student who understands Python.

### Place

Classroom

### Time

1990s or 2000s

## Musical Number

main(S)

Unuk

repeat(**STRANGLE**)

Company

print(**SLITHER OFF**)

Unuk and Gudja

Setting: A classroom contains a desk.

At Rise: UNUK, carrying a stack of papers, enters.

(Song: "S")

**UNUK** (breathlessly.)

UNUK. PLEASE TAKE A BREATH,  
UNUK. SEMESTER'S DONE, UNUK.  
ASTRONOMY, UNUK. WEED-OUT  
COURSES OVER. DEEP RELEVANT  
HOMEWORK.

(Placing the stack on the desk.)

THE SCOPE OF THE TELE.  
BUTTERFLIES IN BELLY.

(Holding her belly.)

YOU ARE STELLAR, UNUK.  
CONSTELLATIONS APART. TIME  
TO TACKLE THE DARK.  
SUPERNOVAE TO START.  
LAGRANGIAN'S BEEN HARD.

(Distancing from the stack.)

(MARFIK, ALYA, and YED stroll in.)

COMMUNITIES OF STARS. SIGN  
THAT ALL LEAVE A MARK.

(GUDJA, carrying a portable computer, marches in.)

A HOLY STAY, UNUK.

(GUDJA examines the stack.)

**UNUK (Cont.)**

THE BREAK'S BEGUN.

(GUDJA removes the stack. She places the computer on the desk.)

(They gather around the desk.)

(Song: "STRANGLE")

**GUDJA**

ALL I ASK OF YOUR MENTAL  
ENVI-MENT. SAVE IT. EXPORT  
THEM. YOU ALL DID THIS IN HIGH  
SCHOOL.

(UNUK alienates the computer.)

PRESENT, WELCOME BACK TO  
THE FUTURE!

(Activating the computer.)

(The computer throttles.)

(UNUK chokes up.)

TIME'S JUST A SCALAR  
QUANTITY THOUGH.

(Pointing to the computer.)

**GUDJA (Cont.)**

FILE... COMPUTE ORBITS AND  
ENERGIES FOR THE SMALLEST  
Timesteps FOR EACH  
INTEGRATION.

(Focusing on the students.)

YED. ALYA. MARFIK. U.

(Refocusing on the computer.)

N N SERPENTIS HAS AN ELIPSICAL  
PERIOD. IT IS ONLY PYTHON.

(Moving aside.)

(MARFIK, ALYA, and YED take control of the  
computer.)

MARFIK	ALYA	YED
README M D.	RUN MATPLOTLIB.	OPEN NUMPY.
ERROR ANALYSIS.	ERROR ANALYSIS.	ERROR ANALYSIS.

(UNUK discreetly takes a piece of paper from the  
hidden stack.)

ENERGY PLOT FUNCTIONS AND  
THE OUTPUT.

(UNUK writes on the paper.)

(MARFIK, ALYA, and YED turn their attention to  
UNUK.)

WHITE.	WHITE.	WHITE.
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(Taking the paper from UNUK.)

<b>MARFIK</b> (Cont.)	<b>ALYA</b> (Cont.)	<b>YED</b> (Cont.)
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COLD WHITE DWARF STAR.  
CALC-LATE MASS RADIUS. FOR  
US.

(Setting UNUK up to the computer.)

MAKE YOURSELF  
USEFUL.

TRY TO BE ON TOP.

DON'T GET LEFT  
BEHIND.

(UNUK holds her head.)

YES PRESSURE.

YES PRESSURE.

YES PRESSURE.

(Pointing to the computer.)

(UNUK glances at the paper.)

(MARFIK, ALYA, and YED rip up the paper. They  
step aside. They occasionally look through other  
papers in the hidden stack.)

**UNUK** (disorientedly.)

STRANGLEHOLD. I CANNOT SAY  
IT IN ASTRONOMY. DON'T KNOW  
COMPUTERS.

**GUDJA**

PYTHON IS ELEGANT SYNTAX,  
SCRIPTING.

**UNUK**

ITS TYPE'S TOO... DYNAMICALLY.

**GUDJA**

PERHAPS QUIT ANALYZING THIS  
TO HAVE DISCOV-RIES MADE ON  
THE WEB.

(Moving aside.)

**UNUK**

NOTHING GOOD COMES OUT OF  
RESEARCHING PYTHON ON THE  
WEB.

(Typing then entering on the computer.)

WELCOME TO THE JAVA...

(Scrolling with conviction.)

(MARFIK, ALYA, and YED slithers back.)