#The list of atoms

atoms=["Hydrogen","Helium","Lithium","Beryllium","Boron","Carbon","Nitrogen","Oxygen","Fluorine","Neon","Sodium","Magnesium","Aluminium","Silicon","Phosphorus","Sulfur","Chlorine","Argon","Potassium","Calcium","Scandium","Titanium","Vanadium","Chromium","Manganese","Iron","Cobalt","Nickel","Copper","Zinc","Gallium","Germanium","Arsenic","Selenium","Bromine","Krypton","Rubidium","Strontium","Yttrium","Zirconium","Niobium","Molybdenum","Technetium","Ruthenium","Rhodium","Palladium","Silver","Cadmium","Indium","Tin","Antimony","Tellurium","Iodine","Xenon","Caesium","Barium","Lanthanum","Cerium","Praseodymium","Neodymium","Promethium","Samarium","Europium","Gadolinium","Terbium","Dysprosium","Holmium","Erbium","Thulium","Ytterbium","Lutetium","Hafnium","Tantalum","Tungsten","Rhenium","Osmium","Iridium","Platinum","Gold","Mercury","Thallium","Lead","Bismuth","Polonium","Astatine","Radon","Francium","Radium"]

#Main program

choice=""

def welcome():

print("="\*40)

print(" "\*12,"W E L C O M E")

print("="\*40)

def add\_atom():

name=input("Enter the name of an atom to add: ")

atoms.append(name)

print(name,"has been added to the list")

def remove\_atom():

name=input("Enter the name of an atom to remove: ")

atoms.remove(name)

print(name,"has been removed from the list")

def linsearch():

name=input("Enter a search term: ")

stop=len(atoms)

for i in range(stop):

if atoms[i]==name:

print(name,"is in the list")

return

else:

print(name,"is not in the list")

def edit\_atom():

print(atoms)

i=int(input("What is the atomic number of the atom you want to change?\n"))

print("You are changing",atoms[i-1])

#'atoms[i-1]' the '-1' is written so that a person who doesn't use python can just search for the atom

#using its atomic number without knowing they have to type the number one less than the actual number

atoms[i-1]=input("Enter a new atom: ")

print(atoms)

def binsearch(atoms):

atoms.sort()

name=input("Enter a search term: ")

while len(atoms)>1:

midpoint=len(atoms)//2

if name<atoms[midpoint]:

atoms=atoms[:midpoint]

else:

atoms=atoms[midpoint:]

if atoms[0]==name:

print(name,"found in the list")

else:

print(name,"not found in the list")

welcome()

while choice!="X":

print("====================")

print("A T O M F I N D E R")

print("====================")

print("\n")

print("A: Append an atom to the list")

print("B: Remove an atom from the list")

print("C: Print the list")

print("D: Sort the list")

print("E: The length of the list")

print("F: Edit an atom")

print("G: Print a specific atom")

print("H: Search if an atom is in the list (linear search)")

print("I: Search if an atom is in the list (binary search)")

print("X: Exit the program")

print("\n")

choice=input("Choose an option: ")

if choice=="A":

add\_atom()

if choice=="B":

remove\_atom()

if choice=="C":

print(atoms)

if choice=="D":

atoms.sort()

print(atoms)

if choice=="E":

print(len(atoms))

if choice=="F":

edit\_atom()

if choice=="G":

i=int(input("Enter the atomic number of the atom you want to print\n"))

print(atoms[i-1])

#'atoms[i-1]' the '-1' is written so that a person who doesn't use python can just search for the

#atom using its atomic number without knowing they have to type the number one less than the actual number

if choice=="H":

linsearch()

if choice=="I":

binsearch(atoms)