# The 7 moons of Jupiter

moons1 = "Io"
moons2 = "Europa"
moons3 = "Ganymede"
moons4 = "Callisto"
moons5 = "Iapetus"
moons6 = "Ione"
moons7 = "Tethys"
# Create and initialize a list

```python
moons = ['Io', 'Europa', 'Ganymede', 'Callisto', 'Iapetus', 'Ione', 'Tethys']
```
# Create and initialize a list
moons = ['Io', 'Europa', 'Ganymede', 'Callisto', 'Iapetus', 'Ione', 'Tethys']

# Print a few items of the list
print("Jupiter's first moon is " + moons[0] + ".")
print("Jupiter's second moon is " + moons[1] + ".")
# Create and initialize a list
moons = ["Io", "Europa", "Ganymede", "Callisto", "Iapetus", "Ione", "Tethys"]

# Print a few items of the list
print("Jupiter's first moon is " + moons[0] + ".")
print("Jupiter's second moon is " + moons[1] + ".")

Jupiter's first moon is Io.
Jupiter's second moon is Europa.
# Create and initialize a list
moons = ["Io", "Europa", "Ganymede", "Callisto", "Iapetus", "Ione", "Tethys"]

# Print a few items of the list
print("Jupiter's first moon is "+ moons[0] + ".")
print("Jupiter's second moon is "+ moons[1] + ".")

# Print the entire list
print(moons)

['Io', 'Europa', 'Ganymede', 'Callisto', 'Iapetus', 'Ione', 'Tethys']
# Create and initialize a list
moons = ["Io", "Europa", "Ganymede", "Callisto", "Iapetus", "Ione", "Tethys"]

# Print a few items of the list
print("Jupiter's first moon is " + moons[0] + ".")
print("Jupiter's second moon is " + moons[1] + ".")

# Print the entire list
print(moons)

# A list can contain anything
numbers = [3, 7, 42, 19, 26]
print(numbers)

[3, 7, 42, 19, 26]
# Create and initialize a list
moons = ["Io", "Europa", "Ganymede", "Callisto", "Iapetus", "Ione", "Tethys"]

# Print a few items of the list
print("Jupiter's first moon is " + moons[0] + ".")
print("Jupiter's second moon is " + moons[1] + ".")

# Print the entire list
print(moons)

# A list can contain anything
numbers = [3, 7, 42, 19, 26]
print(numbers)

# A list can be empty
nothing = []
print(nothing)
characters = ["Horton", "Lorax", "Mayzie"]

# change an element in the list
characters[1] = "Thing One"
print(characters)
characters = ["Horton", "Lorax", "Mayzie"]

# change an element in the list
characters[1] = "Thing One"
print(characters)

["Horton", "Thing One", "Mayzie"]
characters = ["Horton", "Lorax", "Mayzie"]

# change an element in the list
caracters[1] = "Thing One"
print(characters)

# change an element in the list using an expression
characters[5*2-9] = "Lorax"
characters = ["Horton", "Lorax", "Mayzie"]

# change an element in the list
characters[1] = "Thing One"
print(characters)

# change an element in the list using an expression
characters[5*2-9] = "Lorax"

# change an element in the list using a variable
x = 1
characters[x] = "Mazen"
# use list elements as variables
some_numbers = [2, 4, 8, 12]
some_numbers[0] = some_numbers[2] + some_numbers[3]
print(some_numbers)
# use list elements as variables
some_numbers = [2, 4, 8, 12]
some_numbers[0] = some_numbers[2] + some_numbers[3]
print(some_numbers)

[20, 4, 8, 12]
# use list elements as variables
some_numbers = [2, 4, 8, 12]
some_numbers[0] = some_numbers[2] + some_numbers[3]
print(some_numbers)

# be careful when accessing your lists
print(some_numbers[4])

# the length of a list
x = len(some_numbers)
# lists and loops

ums = [1, 7, 4, 10, 8]
i = 0

while i < len(nums):
    if nums[i] % 2 == 0:
        print(str(nums[i]) + " is even")
    i = i + 1
# while loop
i = 1
while i <= 10:
    print(i)
    i = i + 1

# for loop
for i in range(1, 11):
    print(i)
# while loop
i = 1
while i <= 10:
    print(i)
    i = i + 1

# for loop
for i in range(1,11):
    print(i)
# lists and loops

```python
nums = [1, 7, 4, 10, 8]
for i in range(0, len(nums)):
    if nums[i] % 2 == 0:
        print(str(nums[i]) + " is even")
```
# lists and loops

ums = [1, 7, 4, 10, 8]
for n in nums:
    if (n % 2 == 0):
        print(str(n) + " is even")
# lists and loops
nums = [1, 7, 4, 10, 8]
for n in nums:
    if( n % 2 == 0 ):
        print(str(n) + " is even")

# lists and loops
nums = [1, 7, 4, 10, 8]
for i in range(0,len(nums)):
    if( nums[i] % 2 == 0 ):
        print(str(nums[i]) + " is even")
# strings can be treated like lists (sort of)

mystring = "Chevy!"

for c in mystring:
    print(c)

# but, this doesn’t work

mystring[0] = "c"
# a list can contain multiple types
mixed_list = [1, "abc", True, 2.0]

# including lists
# including lists
mixed_list = ["abc", [3,2,1]]
L = mixed_list[1]
print(L)
print(L)
print(L[0])
print(L[0][0])
print(mixed_list[1][0])
# a list can contain multiple types
mixed_list = [1, "abc", True, 2.0]

# including lists
# including lists
mixed_list = ["abc",[3,2,1]]
L = mixed_list[1]
print(L)  
[3,2,1]  
print(L[0])
print(mixed_list[1][0])
print(mixed_list[1][0])
# a list can contain multiple types
mixed_list = [1, "abc", True, 2.0]

# including lists
mixed_list = ["abc",[3,2,1]]
L = mixed_list[1]
print(L) # [3,2,1]
print(L[0]) # 3
print(mixed_list[1][0]) # 3
# a list can contain multiple types
mixed_list = [1, "abc", True, 2.0]

# including lists
mixed_list = ["abc", [3, 2, 1]]
L = mixed_list[1]
print(L)  
3
print(L[0])  
3
print(mixed_list[1][0])  
3
Reverse List

L = ["a", "b", "c", "d", "e", "f"]
Reverse List

$L = ["a", "b", "c", "d", "e", "f"]$
Reverse List

L = ["a", "b", "c", "d", "e", "f"]
Reverse List

L = ["a", "b", "c", "d", "e", "f"]
Reverse List

L = ["a", "b", "c", "d", "e", "f"]

for every item in list:
    swap item with corresponding item at end of list
Reverse List

L = ["a", "b", "c", "d", "e", "f"]

for first half of items in list:
    swap item with corresponding item at end of list
Reverse List

L = ["a", "b", "c", "d", "e"]

for first half (round down) of items in list:
    swap item with corresponding item at end of list
Reverse List (swap)

L = ["a", "b", "c", "d", "e"]
Reverse List (swap)

L = ["a", "b", "c", "d", "e"]

L[0] = L[4]
L[4] = L[0]
Reverse List (swap)

L = ["a", "b", "c", "d", "e"]

L[0] = L[4]  →  [ebcde]
L[4] = L[0]
Reverse List (swap)

\[ L = ["e", "b", "c", "d", "e"] \]

\[ L[0] = L[4] \]
\[ L[4] = L[0] \]

\[ [ebcde] \]
Reverse List (swap)

L = ["a", "b", "c", "d", "e"]

temp = L[0]      a
L[0] = L[4]      [ebcde]
Reverse List (swap)

L = ["a", "b", "c", "d", "e"]

temp = L[1]  
b
L[1] = L[3]  
[edcda]
L[3] = temp  
[edcba]
Reversing a list

```python
# Reverse a list
L = [1, 3, 5, 7, 9, 11, 13, 15]
i = 0
while i < len(L) / 2:
    j = len(L) - 1 - i

    # Swap the items at i and j
    temp = L[i]
    L[i] = L[j]
    L[j] = temp

i = i + 1
```
# Reverse a list

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i = i + 1
Reversing a list

```python
L = [1, 3, 5, 7, 9, 11, 13, 15]
for i in ???:
    j = ???
    temp = L[i]
    L[i] = L[j]
    L[j] = temp
```
Reversing a list

L = [1, 3, 5, 7, 9, 11, 13, 15]
for i in range(0,len(L)/2):
    j = ???
    temp = L[i]
    L[i] = L[j]
    L[j] = temp
Reversing a list

L = \[1, 3, 5, 7, 9, 11, 13, 15\]

for i in range(0,len(L)/2):
    j = len(L) - 1 - i
    temp = L[i]
    L[i] = L[j]
    L[j] = temp
# --- DRILL ---
# Write some code that takes prints “has22” if the list contains a 2 next to a 2 anywhere in the list, and returns “no22” otherwise

# solve incrementally
# --- DRILL ---
# Write some code that takes prints “has22” if
# the list contains a 2 next to a 2 anywhere in
# the list, and returns “no22” otherwise

L = [1,2,3,4,5,6]
flag = 0
for i in range(0,len(L)-1):
    if( L[i]==2 and L[i+1]==2 ):
        print("has22")
        flag = 1
        break
if( flag == 0 ):
    print("no22")