Team Chooser

Introduction:

In this project, you'll learn how to create 2 random teams from a list of players.

```
Players: ['Harry', 'Hermione', 'Neville', 'Ginny', 'Luna']
Team names: ['Alligators', 'Gorillas', 'Eagles', 'Pythons',
'Wasps', 'Panthers']

Here are your teams:

Panthers ['Ginny', 'Neville', 'Harry']
Pythons ['Hermione', 'Luna']
```

Step 1: Players

Let's start by creating a list of players to choose from.

✅ Activity Checklist

- ☐ Open the blank Python template Trinket: **jumpto.cc/python-new**.

- ☐ You can use a variable to store a **list** of players. The list should be in square brackets `[]`, with a comma between each item in the list.

  Start by adding a list of players to your program.

  ```
  players = ['Harry', 'Hermione']
  ```

- ☐ Add this code to print your `players` variable:

  ```
  players = ['Harry', 'Hermione']
  print(players)
  ```
  `['Harry', 'Hermione']`

☐ You can get to an item in the list by adding its position in square brackets after the variable name.

The first item in the list is at **position 0**. This is different to Scratch, which starts at position 1.

```python
players = ['Harry', 'Hermione']
print(players)

print(players[0])
print(players[1])
```

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Challenge: Adding more players

Can you add more players to your list? You can add as many players as you like, but make sure that there is an **even** number of players.

You can also change the names of the first 2 players if you prefer.

Can you add code to print **just one** of your new players?

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Step 2: Random players

Let's choose random players!

✅ Activity Checklist

- [ ] To be able to get a random player from your `players` list, first you'll need to import the `choice` part of the `random` module.

```python
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

print(players[0])
print(players[1])
```

- [ ] To get a random player, you can use `choice`. (You can also delete the code to print individual players.)

```python
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

print(choice(players))
```

```
['Harry', 'Hermione', 'Neville', 'Ginny']
Hermione
```

- [ ] Test your `choice` code a few times and you should see a different player being chosen each time.

- [ ] You can also create a new variable called `playerA`, and use it to store your random player.

```python
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

playerA = choice(players)
print(playerA)
```

```
['Harry', 'Hermione', 'Neville', 'Ginny']
Hermione
```

- [ ] You'll need a new list to store all of the players in team A. To start with, this list should be empty.

```python
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

teamA = []

playerA = choice(players)
print(playerA)
```

☐ You can now add your randomly chosen player to `teamA` . To do this, you can use `teamA.append` (**append** means add to the end).

```python
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

teamA = []

playerA = choice(players)
print(playerA)
teamA.append(playerA)
```

☐ Now that your player has been chosen, you can remove them from your list of `players` .

```python
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

teamA = []

playerA = choice(players)
print(playerA)
teamA.append(playerA)
players.remove(playerA)
```

☐ Test this code by adding a `print` command, to show the `players` left to choose from.

```python
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

teamA = []

playerA = choice(players)
print(playerA)
teamA.append(playerA)
players.remove(playerA)
print('Players left:', players)
```

In the example above, Hermione has been chosen for `teamA` , and so

has been removed from the list of `players` .

Save Your Project

Challenge: Choosing for team B

Can you add code to choose a player at random for team B?
You'll need to:

- [ ] Create a new `teamB` list
- [ ] Choose a random player for team B (called `playerB`)
- [ ] `append` the chosen player to your `teamB` list
- [ ] `remove` the chosen player from your list of `players`

The code you'll need for `teamB` will be **very** similar to the code you've already written for `teamA` !

Save Your Project

Step 3: Choosing lots of players

Next you'll need to make sure that every player has been chosen for a team.

✅ Activity Checklist

- [ ] Highlight your code for choosing players for team A and team B and press the tab key to indent the code.

```
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

teamA = []
teamB = []
```

```
    playerA = choice(players)
    print(playerA)
    teamA.append(playerA)
    players.remove(playerA)
    print('Players left:', players)

    playerB = choice(players)
    print(playerB)
    teamB.append(playerB)
    players.remove(playerB)
    print('Players left:', players)
```

☐ Add a **while** loop to keep choosing players until the length of the `players` list is 0.

```
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

teamA = []
teamB = []

while len(players) > 0:
    playerA = choice(players)
    print(playerA)
    teamA.append(playerA)
    players.remove(playerA)
    print('Players left:', players)

    playerB = choice(players)
    print(playerB)
    teamB.append(playerB)
    players.remove(playerB)
    print('Players left:', players)
```

☐ Run your code to test it. You should see players being chosen for team A and team B until there are no more players left.

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```
['Harry', 'Hermione', 'Neville', 'Ginny']
Chosen for team A: Harry
Team A: ['Harry']
Players left:  ['Hermione', 'Neville', 'Ginny']
Chosen for team B: Hermione
Team B: ['Hermione']
Players left:  ['Neville', 'Ginny']
Chosen for team A: Ginny
Team A: ['Harry', 'Ginny']
Players left:  ['Neville']
Chosen for team B: Neville
Team B: ['Hermione', 'Neville']
Players left:  []
```

☐ Add code to print your `teamA` list **after** your `while` loop (making sure it is not indented).

This means that `teamA` will only be printed once, after all the players have been chosen.

```python
while len(players) > 0:
    playerA = choice(players)
    print(playerA)
    teamA.append(playerA)
    players.remove(playerA)
    print('Players left:', players)

    playerB = choice(players)
    print(playerB)
    teamB.append(playerB)
    players.remove(playerB)
    print('Players left:', players)

print('Team A:', teamA)
```

☐ You can do the same for `teamB`, and you can also delete the other print commands, as they were only there to test your code.

Here's how your code should look:

```python
from random import choice

players = ['Harry', 'Hermione', 'Neville', 'Ginny']
print(players)

teamA = []
teamB = []

while len(players) > 0:
    playerA = choice(players)
    teamA.append(playerA)
    players.remove(playerA)

    playerB = choice(players)
    teamB.append(playerB)
    players.remove(playerB)

print('Team A:', teamA)
print('Team B:', teamB)
```

☐ Test your code again and you should just see your list of players as well as your final teams.

```
['Harry', 'Hermione', 'Neville', 'Ginny']
Team A: ['Hermione', 'Ginny']
Team B: ['Harry', 'Neville']
```
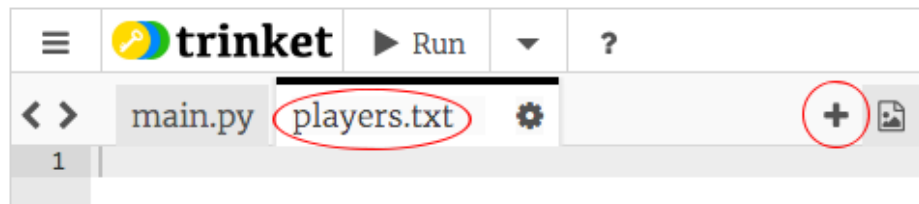
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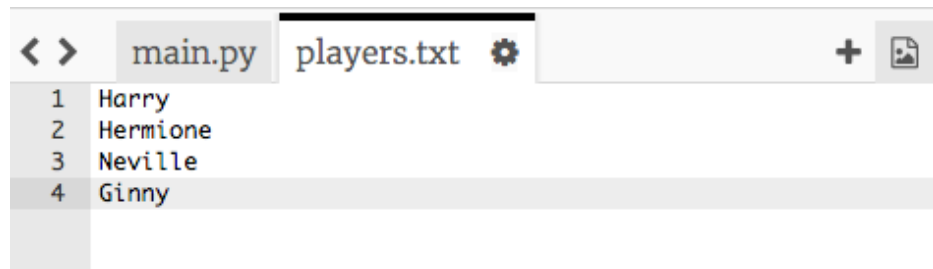# Step 4: Files

You can use a file to store your list of players.

✔ Activity Checklist

☐ Click the + icon and create a new file called `players.txt` .

☐ Add your players to your new file. Make sure that there is no blank line after your last player.

☐ Change your `players` list so that it is empty.

```python
from random import choice

players = []
print(players)

teamA = []
teamB = []
```

☐ Open your `players.txt` file (the `'r'` means read-only).

```python
from random import choice

players = []
file = open('players.txt', 'r')
print(players)

teamA = []
teamB = []
```

☐ Read the list from the file and add to your `players` list. (The `splitlines` code means that every line in the file is a new item in the `players` list).

```
from random import choice

players = []
file = open('players.txt', 'r')
players = file.read().splitlines()
print(players)

teamA = []
teamB = []
```

☐ If you test your code, it should work exactly the same as before. However, now it's much easier to add players to your `players.txt` file.

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Step 5: Odd players

Let's improve your program to work with an odd number of players.

✅ Activity Checklist

☐ Add another name to your `players.txt` list, so that you have an odd number of players.

```
< >   main.py   players.txt  ⚙   +  🖼
   1   Harry
   2   Hermione
   3   Neville
   4   Ginny
   5   Luna
```

☐ If you test your code, you'll see that you get an error message.

```
    playerB = choice(players)
    teamB.append(playerB)
    players.remove(playerB)

print('Team A:', teamA)
print('Team B:', teamB)
```

IndexError: list index out of range on line 19 in main.py

☐ The error is because your program keeps choosing random players for team A and then team B. However, if there is an odd number of players then after choosing a player for team A there are no players left to choose from for team B.

To fix this bug, you can tell your program to `break` out of your `while` loop if your `players` list is empty.

```
while len(players) > 0:
    playerA = choice(players)
    teamA.append(playerA)
    players.remove(playerA)

    if players == []:
      break

    playerB = choice(players)
    teamB.append(playerB)
    players.remove(playerB)
```

☐ If you test your code again, you should see that it now works with an odd number of players.

```
['Harry', 'Hermione', 'Neville', 'Ginny', 'Luna']
Team A: ['Harry', 'Luna', 'Ginny']
Team B: ['Neville', 'Hermione']
```

Save Your Project

Challenge: Random team names

Can you give both of your teams a random team name?

You can create a list called `teamNames` containing the names to choose from.

You can then choose (and display) a random name for each team.

```
Players: ['Harry', 'Hermione', 'Neville', 'Ginny', 'Luna']
Team names: ['Alligators', 'Gorillas', 'Eagles', 'Pythons',
'Wasps', 'Panthers']

Here are your teams:

Panthers ['Ginny', 'Neville', 'Harry']
Pythons ['Hermione', 'Luna']
```

Save Your Project

Challenge: Storing team names

Can you store your list of team names in a file?

Save Your Project

Challenge: More teams

Can you improve your program to split players into 3 teams instead of 2?

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