

CS 110

If, else, and elif

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Announcements

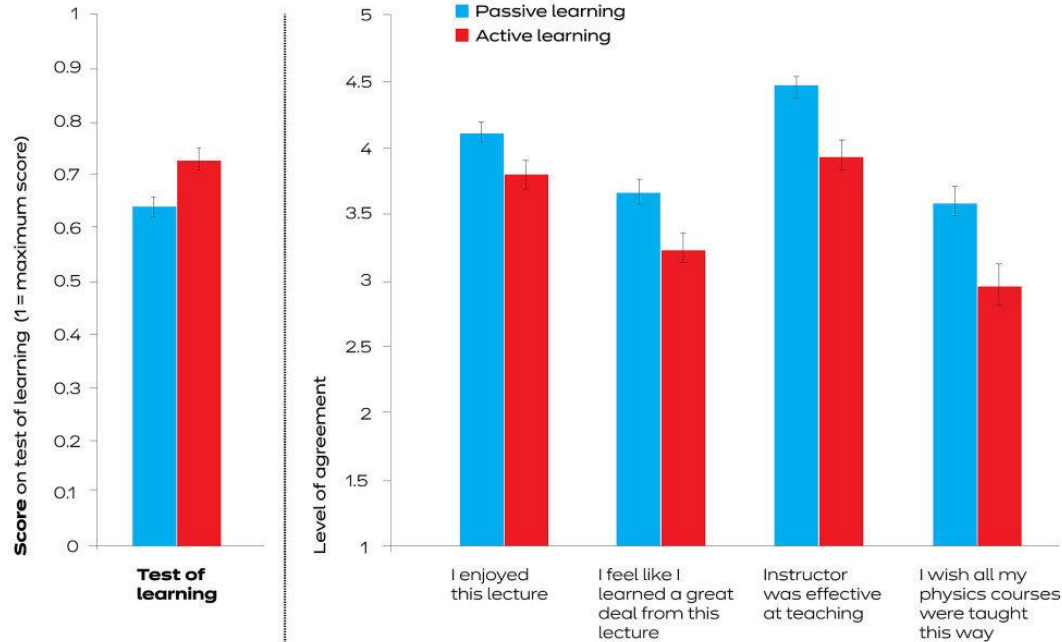
- PA 3
- Regrade requests
- PA Feedback in Gradescope



**Look at the
feedback!**

Harvard Study (See: <https://phys.org/news/2019-09-students-classrooms.html>)

Performance vs. perception



if-else

Use the **if** statement to execute code in the **True** case

Can add an **else** to specify code to run in the **False** case

statements . . .

```
if condition:
    statement 1a
    statement 2a
    . . .
    statement Na
else:
    statement 1b
    statement 2b
    . . .
    statement Nb
```

statements . . .

What inputs to print “Cannot arrive in time” ?

```
flight_time = int(input('Enter flight time:\n'))
delay = int(input('Enter flight delay in minutes:\n'))
meeting_time = int(input('Enter time until next meeting:\n'))

if flight_time > meeting_time:
    print('You will be late')
if flight_time + delay > meeting_time:
    if delay < 20:
        print('You might make the meeting')
    else:
        print('Cannot arrive in time')
else:
    print('Don\'t worry')
```

String comparison

- Compares alphabetically, one character at-a-time, left-to-right

'albatross' == 'albertson'

What is the result?

String comparison

- Compares alphabetically, one character at-a-time, left-to-right

'albatross' <= 'albertson'

What is the result?

String comparison

- Compares alphabetically, one character at-a-time, left-to-right

'albatross' <= 'albERTSON'

What is the result?

What will it print?

```
name = input('What is your name (lower case)? ')
```

```
if name <= 'chase' or name > 'trevor':
```

```
    print('name category 1')
```

```
elif name > 'chase' and name < 'ianto':
```

```
    print('name category 2')
```

```
else:
```

```
    print('name category 3')
```

What will it print?

When the input is jeff ?

```
name = input('What is your name (lower case)? ')
```

```
if name <= 'chase' or name > 'trevor':
```

```
    print('name category 1')
```

```
elif name > 'chase' and name < 'ianto':
```

```
    print('name category 2')
```

```
else:
```

```
    print('name category 3')
```

What will it print?

When the input is chance ?

```
name = input('What is your name (lower case)? ')
```

```
if name <= 'chase' or name > 'trevor':
```

```
    print('name category 1')
```

```
elif name > 'chase' and name < 'ianto':
```

```
    print('name category 2')
```

```
else:
```

```
    print('name category 3')
```

What will it print?

When the input is iancu ?

```
name = input('What is your name (lower case)? ')
```

```
if name <= 'chase' or name > 'trevor':
```

```
    print('name category 1')
```

```
elif name > 'chase' and name < 'ianto':
```

```
    print('name category 2')
```

```
else:
```

```
    print('name category 3')
```

elif

- You can follow an **if** with zero or more **elif** statements
- With **elif** statements, you provide a **condition** as you do with an **if** statement
- A chain of **if/elif** will be followed until it reaches a condition that evaluates to **True**
- Once such a condition is reached, python will execute the body of that particular **if** or **elif** and then continue on after the chain.

statements . . .

if conditionA:

statements

elif conditionB:

statements

statements . . .

statements . . .

```
if conditionA:  
    statements
```

```
elif conditionB:  
    statements
```

```
elif conditionC:  
    statements
```

statements . . .

statements . . .

```
if conditionA:  
    statements
```

```
elif conditionB:  
    statements
```

```
elif conditionC:  
    statements
```

```
elif conditionD:  
    statements
```

statements . . .

statements . . .

```
if conditionA:  
    statements
```

```
elif conditionB:  
    statements
```

```
elif conditionC:  
    statements
```

```
else:  
    statements
```

statements . . .

Write the program

- Accepts a number as input
- Prints out the letter grade that you will receive

```
What is your numeric grade? 97  
You will get an A
```

```
What is your numeric grade? 72  
You will get a C
```

```
What is your numeric grade? 50  
You will get an F
```

```
import os
```

```
numeric_grade = input('What is your numeric grade? ')
```

```
if numeric_grade.isnumeric() == False:
```

```
    print('Enter a different value next time. Exiting.')
```

```
    os._exit(0)
```

```
numeric_grade = int(numeric_grade)
```

```
# Write your code as if it would go here
```

```
if numeric_grade >= 60:
    if numeric_grade >= 70:
        if numeric_grade >= 80:
            if numeric_grade >= 90:
                print('You will get an A')
                os._exit(0)
            print('You will get a B')
            os._exit(0)
        print('You will get a C')
        os._exit(0)
    print('You will get a D')
    os._exit(0)

print('You will get an F')
```

```
if numeric_grade >= 90:  
    print ('You will get an A')  
if numeric_grade >= 80:  
    print ('You will get a B')  
if numeric_grade >= 70:  
    print ('You will get a C')  
if numeric_grade >= 60:  
    print ('You will get a D')  
if numeric_grade < 60:  
    print ('You will get an F')
```

```
if numeric_grade >= 90:  
    print ('You will get an A')  
elif numeric_grade >= 80:  
    print ('You will get a B')  
elif numeric_grade >= 70:  
    print ('You will get a C')  
elif numeric_grade >= 60:  
    print ('You will get a D')  
elif numeric_grade < 60:  
    print ('You will get an F')
```

```
if numeric_grade >= 90:  
    print ('You will get an A')  
elif numeric_grade >= 80:  
    print ('You will get a B')  
elif numeric_grade >= 70:  
    print ('You will get a C')  
elif numeric_grade >= 60:  
    print ('You will get a D')  
else:  
    print ('You will get an F')
```

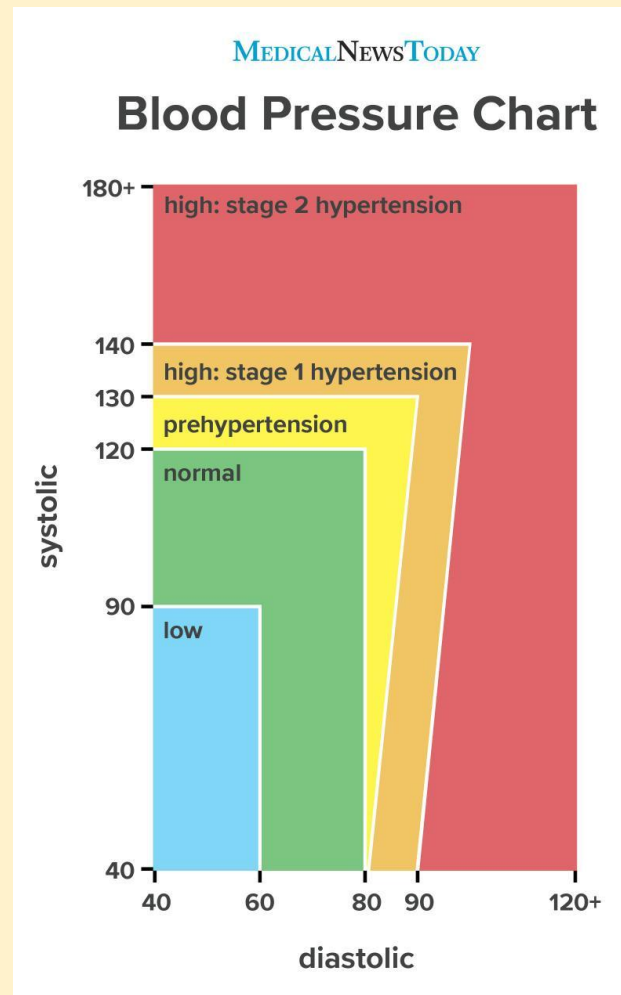

Blood Pressure

- Blood pressure measurement machines at pharmacies
- Some people don't know how to properly interpret the numbers
- Might be good for machine to indicate low, normal, or high



Blood Pressure

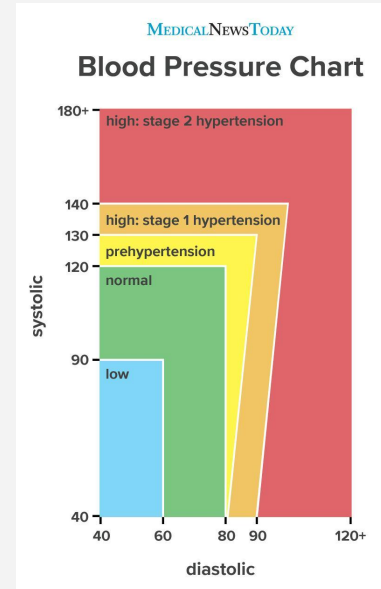
- **Systolic:** Pressure on artery walls while ventricles in heart squeeze
- **Diastolic:** Pressure on artery walls while heart relaxes (thus, lower)
- Write code that allows user to enter two inputs (**systolic** pressure and **diastolic** pressure) and determines if it is **low**, **normal**, or **high**



Is this correct?

```
systolic = float(input('Systolic pressure: '))  
diastolic = float(input('Diastolic pressure: '))
```

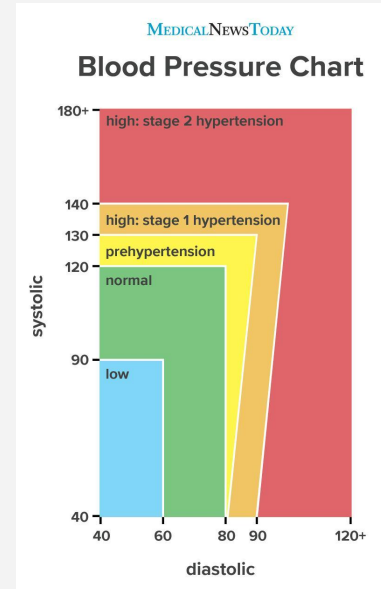
```
if systolic > 120:  
    if diastolic > 80:  
        print('High blood pressure')  
elif systolic > 90:  
    if diastolic > 60:  
        print('Normal blood pressure')  
else:  
    print('Low blood pressure')
```



Is this correct?

```
systolic = float(input('Systolic pressure: '))  
diastolic = float(input('Diastolic pressure: '))
```

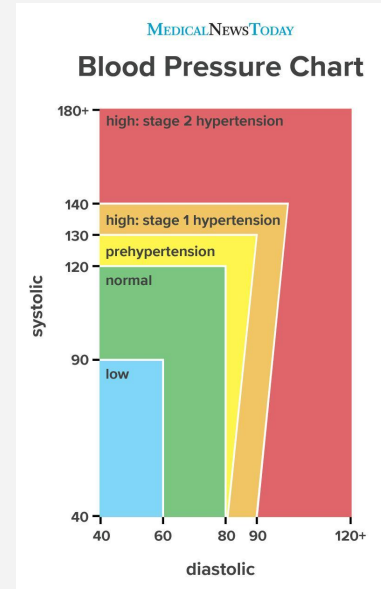
```
if systolic > 120 and diastolic > 80:  
    print('High blood pressure')  
if systolic > 90 and diastolic > 60:  
    print('Normal blood pressure')  
if systolic > 0 and diastolic > 0:  
    print('Low blood pressure')
```



Is this correct?

```
systolic = float(input('Systolic pressure: '))  
diastolic = float(input('Diastolic pressure: '))
```

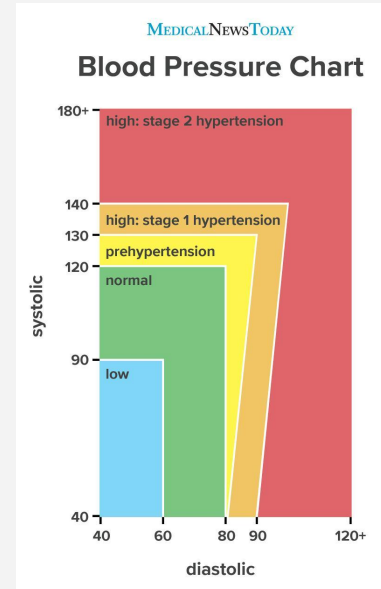
```
if systolic > 120 and diastolic > 80:  
    print('High blood pressure')  
elif systolic > 90 and diastolic > 60:  
    print('Normal blood pressure')  
else:  
    print('Low blood pressure')
```



Is this correct?

```
systolic = float(input('Systolic pressure: '))  
diastolic = float(input('Diastolic pressure: '))
```

```
if systolic > 120 or diastolic > 80:  
    print('High blood pressure')  
elif systolic > 90 or diastolic > 60:  
    print('Normal blood pressure')  
else:  
    print('Low blood pressure')
```



if-else

What pair of inputs would cause *only* "**Workload OK**" to print ?

```
title = input('Job title: ')
hours = int(input('Hours worked per week: '))
```

```
if title != 'manager' and hours > 20:
    if title == 'waiter':
        print('Workload too high')
    else:
        print('Workload OK')
if hours > 40:
    print('Reduce hours')
else:
    print('Acceptable hours')
```

if-else

Is it possible to print both "**Workload OK**" and "**Reduce hours**" ?

```
title = input('Job title: ')
hours = int(input('Hours worked per week: '))
```

```
if title != 'manager' and hours > 20:
    if title == 'waiter':
        print('Workload too high')
    else:
        print('Workload OK')
if hours > 40:
    print('Reduce hours')
else:
    print('Acceptable hours')
```


*Provide one pair of inputs to print “**Workload too high**”*

```
title = input('Job title: ')
hours = int(input('Hours worked per week: '))

if title >= 'chair' and title <= 'wait':
    if title != 'busser':
        print('Workload too high')
    else:
        print('Workload OK')
if hours > 50:
    print('Reduce hours')
else:
    print('Acceptable hours')
```

if-else

Provide one pair of inputs that would cause “Not acceptable” to print out

```
age = int(input('Enter age:'))
citizenship = input('Enter citizenship:')

if citizenship < 'i' and (age >= 15 or citizenship > 't'):
    print('You can join the club')
else:
    print('Not acceptable')
```