

Computing

# Lesson 5: Logical Expressions

**Programming Part 2: Selection**

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# Parson's puzzle



# Instructions

Take a look at the code on the next slide. It contains all of the code needed to create a simple **password checker**.

Your job is to rearrange the lines of code so that the program will:

- ask for a password
- check it against the stored password
- if it matches the stored password it will output access granted
- if it doesn't match it will output access denied

**Note: You will need to add indents when needed**



# The code:

```
1  if password == stored_password:  
2  print("Enter password:")  
3  password = input()  
4  else:  
5  print("Access granted")  
6  print("Access denied")  
7  stored_password = "Fish4321"
```



# Your playing card



# Sandwich order calculator



# Task 1: Predict

Take a look at the code on the next slide. Read it carefully and try to make a prediction about what might happen when this code is executed. Consider the different inputs that could be used with this program.

**Remember to write down your prediction.**



```
1 total_cost = 0.00
2 sugar_tax = 0.50
3 print("Sandwich or Wrap?")
4 bread_type = input()
5 print("Meat, Vegetarian or Vegan?")
6 filling_type = input()
7 print("Cookie, Crisps, Fruit or None")
8 pudding = input()
9 print("Fizzy drink, Water, Juice or None")
10 drink = input()
11 if bread_type != "sandwich":
12     total_cost = 2.00
13 else:
14     total_cost = 3.00
15 if filling_type == "vegetarian" or filling_type == "vegan":
16     total_cost = total_cost + 1.00
17 else:
18     total_cost = total_cost + 1.50
19 if pudding == "cookie" and drink == "fizzy drink":
20     total_cost = total_cost + sugar_tax
21 if pudding == "none" or drink == "none":
22     total_cost = total_cost - 0.50
23 print(f"Your total cost is: £{total_cost}")
```



# Task 2: Run

**Open** and **run** the file with this code.

Here's a copy of the program ([oaknat.uk/comp-ks4-sandwichorder](https://oaknat.uk/comp-ks4-sandwichorder)).

Was your prediction correct? Did anything unexpected happen? Write down your thoughts.



# Task 3: Investigate

Investigate the program using the steps below:

## Step 1

Which bread type do you need to choose for the total cost to increase by £3.00?

## Step 2

Which filling types can you choose for the total cost to increase by £1.00?

## Step 3

Which choices lead to a sugar tax being applied?



# Task 3: Investigate

Investigate the program using the steps below:

## Step 4

List the 2 possible choices that you can make to get £0.50 taken off the total cost.

## Step 5

On line 21, change the or to an and.

- What choices do you now need to make to get £0.50 taken off the total cost?



# Task 4: Modify

<b>Modification 1</b>	<b>Hint</b>
<p>The code only works if you enter the data in lowercase. Modify the code so that it converts the input to lowercase automatically.</p>	<p>Think about the techniques that you used in the last few lessons. Revisit old code.</p> <p>E.g. <code>.upper()</code> will convert to uppercase</p>
<b>Modification 2</b>	<b>Hint</b>
<p>Add in an option for if they would like an extra sauce.</p>	<p>Look at the original lines 3 and 4 for sample code.</p>



# Task 4: Modify

Modification 3	Hint
Add in an option for if they would like an extra salad.	

Modification 4	Hint
Add in some code to increase the total cost by £1.00 if they choose an extra sauce AND an extra salad.	Look at the original line 19 for sample code.



# Pizza calculator



# Make a Pizza Calculator

A pizza restaurant would like you to create a program that works out the total cost for each pizza that they sell.

Here is a breakdown of their charges:

## Base options

- Thick crust      £8.00
- Thin crust      £10.00

## Size options

*No additional charge*

- 8 inch
- 10 inch

*£2.00 additional charge*

- 12 inch
- 14 inch
- 18 inch



# Make a Pizza Calculator

## Cheese

Cheese is included but there is a discount of **£0.50** if you choose no cheese

## Type

- Margherita + £0.00
- Vegetable + £1.00
- Vegan + £1.00
- Hawaiian + £2.00
- Meat feast + £2.00

## Voucher code

If the customer buys an 18 inch pizza and has the voucher code “FunFriday” then they get £2.00 off their pizza.



# Task 1: Which pizza?

- Create a series of print statements and inputs that will allow the customer to type in their pizza requirements.
- Test your code using the example input/outputs below and on the following slide:

## Example

Note: Use this example to help you test your program. Given the input you see in this sample interaction, this is the output your program should produce.

---

The user is prompted about their base choice      `Would you like a thin or thick crust?`

The user enters a response      `thick`

The user is prompted about their pizza size      `Pick a pizza size from 8, 10, 12, 14 or 18 inches`

The user enters a response      `14`



# Task 1: Which pizza?

The user is prompted if they would like cheese

```
Would you like cheese? Y/N
```

The user enters a response

```
Y
```

The user is prompted about the pizza type

```
Which pizza type would you like?  
Margherita, Vegetable, Vegan, Hawaiian or Meat  
Feast
```

The user enters a response

```
margherita
```

The user is prompted about a voucher code

```
If you have a voucher code, enter it now  
Press enter to skip
```

The user enters a response

```
FunFriday
```

The program ends

```
>>>
```



# Support with Task 1

## Sample code block:

```
print("Thin or thick crust?")  
  
base = input()
```

## Common errors:

- ❑ Capital P used for print
- ❑ Brackets missing from start or end of text
- ❑ Speech marks missing from start or end of text
- ❑ Brackets missing at the end of the input



## Task 2: Calculate the pizza base cost

- Make sure that a `total_cost` variable has been created for the total cost of the pizza
- Create an if statement that will apply £10.00 if their pizza is thin and £8.00 if it is thick
- Use a print statement to print the `total_cost` at the end of the code block so that you can test that the code is working.

**Tip:** Test it with both inputs. What is the `total_cost` when the user enters thick and what is the `total_cost` when the user enters thin?



# Support with Task 2

## Sample code block:

```
total_cost =   
if base == "thin":  
    total_cost = total_cost +   
else:  
    total_cost =   
# for testing  
print(total_cost)
```

## Common errors:

- ❑ Uppercase I is used for if
- ❑ One = sign is used instead of ==
- ❑ Colon : missing at the end of the if
- ❑ Capital E used for else
- ❑ Indents/spaces have been missed
- ❑ Quotations missed around the choice in the condition
- ❑ Choice in the condition is written in uppercase but .lower() has been used



## Task 3: Add the pizza slice cost

- There are just two different costs for the size options. If the pizza is larger than 10 inches then an additional charge of £2.00 is applied. Create an if statement that will apply this charge based on this condition.
- Use a print statement to print the total cost and test your code.

### Sample code block:

```
if size > 10:
```



## Task 4: Cheese or no cheese

If the cheese is not equal to yes then a discount of 50 pence is applied to the `total_cost`. Create an if statement that will perform this calculation based on the condition.

**Sample code block:**

```
if cheese != "y":
```



# Task 5: Pizza types

- There are three different pricing options for the pizza. The Margherita pizza doesn't have an additional charge so decide if this needs to be part of one of your conditions.
- If the pizza is Vegetable or Vegan then there is an additional charge of £1.00
- If the pizza is Hawaiian or Meat Feast then there is an additional charge of £2.00
- Decide what if statements and conditions you will need to apply these costs.
- Test your code by using a print statement to print the total cost. Remember to test all possible inputs.



# Tasks 6 and 7: The voucher code, display total cost

## The voucher code

- The voucher code can be applied when the customer purchases an 18-inch pizza and has typed in the correct code which is FunFriday. Create an if statement that checks that both conditions are true and then applies the £2.00 discount.

## Display total cost

- Repeat the order back to the customer and reveal the total cost of the pizza.



# Task 8: Testing your code

- Test your code by entering all of the different possible scenarios for ordering a pizza.
- Fix any errors that might occur.
- Remember to use `.lower()` or `.upper()` where required

The following slides contain a sample testing table that could be used to check the output based on certain inputs.



# Testing table

## Example

Note: Use this example to help you test your program. Given the input you see in this sample interaction, this is the output your program should produce.

---

The user is prompted about their base choice      `Would you like a thin or thick crust?`

The user enters a response      `thin`

The user is prompted about their pizza size      `Pick a pizza size from 8, 10, 12, 14 or 18 inches`

The user enters a response      `12`

The user is prompted if they would like cheese      `Would you like cheese? Y/N`

The user enters a response      `Y`



# Testing table

The user is prompted about the pizza type

```
Which pizza type would you like?  
Margherita, Vegetable, Vegan, Hawaiian or  
Meat Feast
```

The user enters a response

```
margherita
```

The user is prompted about a voucher code

```
If you have a voucher code, enter it now  
Press enter to skip
```

The user enters a response

```
FunFriday
```

The order is displayed back to the user with the total cost displayed

```
Your thin crust 12 inch margherita pizza will  
cost £12.00
```

