

# Lesson 8: Logical expressions

# Parson's Puzzle

Use the **starter activity worksheet** to solve the **Parson's Puzzle**.

## Parson's Puzzle

Take a look at the code below. 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 required

```
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"
```

Enter your rearranged code here:

```
1
2
3
4
5
6
7
```

# Answer

**Variable initialisation** and assignment should execute at the top of the code where possible.

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

# Answer

The user will then need a **prompt** to **enter a password** before they enter it.

The **user input** will need to be held in another **variable**.

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

# Answer

An **if statement** is then used to check if the **stored password** matches the **entered password**.

If the **condition** is **True**, then it will output "Access granted".

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

# Answer

If the **condition** is **False**, then it will output “Access denied”.

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



# Lesson 10: Logical expressions

## In this lesson, you will:

- Describe how Boolean/logical operators can be used in expressions
- Walk through code that use conditions with Boolean/logical operators (AND, OR)
- Write and use expressions that use Boolean/logical operators (AND, OR)

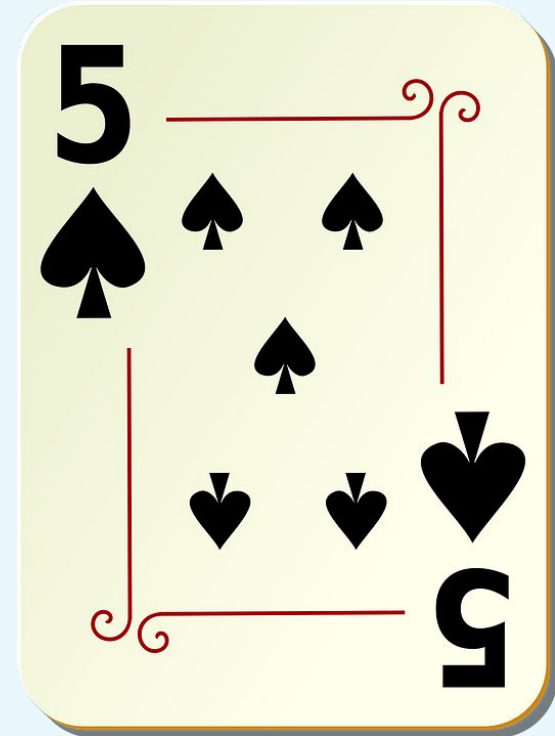
## Playing cards: True or false?

You will now be given a playing card.

You will need to know the following properties of the card:

- Colour (*black or red*)
- Suit (*hearts, clubs, diamonds, or spades*)
- The value (*number, or jack, queen, king, ace, joker*)

*Ace is low (value = 1)*



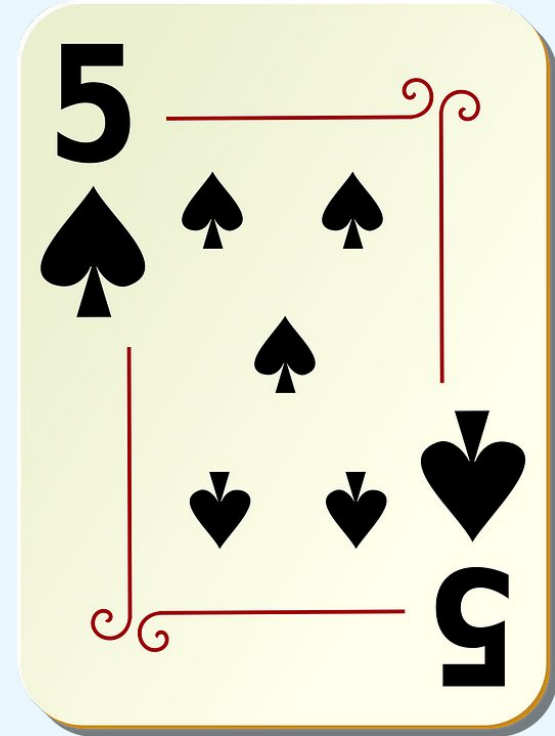


# Playing cards: True or false?

You will now be shown expressions.

You have to decide if your card evaluates as True or False.

Stand in the appropriate place in the room, depending on how you have evaluated (True or False).



# True or false?

value > 6

```
1 value = int(input())
2 if value > 6:
3     print("My card is a match")
4 else:
5     print("My card is not a match")
6
7
```

## True or false?

value == "king"

and

suit == "hearts"

```
1 value = input()
2 suit = input()
3 if value == "king" and suit == "hearts":
4     print("My card is a match")
5 else:
6     print("My card is not a match")
7
```

## True or false?

suit == "spades"

and

suit == "hearts"

```
1 suit = input()
2 if suit == "spades" and suit == "hearts":
3     print("My card is a match")
4 else:
5     print("My card is not a match")
6
7
```

## True or false?

suit != "hearts"

```
1 suit = input()
2 if suit != "hearts":
3     print("My card is a match")
4 else:
5     print("My card is not a match")
6
7
```

## True or false?

colour != "red"

and

suit == "hearts"

```
1 colour = input()
2 suit = input()
3 if colour != "red" and suit == "hearts":
4     print("My card is a match")
5 else:
6     print("My card is not a match")
7
```

## True or false?

value < 7

or

suit == "spades"

```
1 value = int(input())
2 suit = input()
3 if value < 7 or suit == "spades":
4     print("My card is a match")
5 else:
6     print("My card is not a match")
7
```

# Sandwich order calculator

Use the worksheet to **investigate** and **modify** the code for a sandwich order calculator.

Complete the **make** task to create your own pizza-cost calculator.

## Predict

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

```
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}")
```

## Run

Open and **run** the file with this code. Here's a [copy of the code](https://nccel.io/ks4-sandwichorder) (nccel.io/ks4-sandwichorder) if needed.





# Spot the five errors in this program

Use the **plenary worksheet** to mark your answers.

```
1 colour == input()
2 suit = input()
3 if colour != "red" AND suit = "hearts":
4     print("My card is a match")
5 Else:
6     print("My card is not a match")
```



# Spot the five errors in this program

Should be a single equals sign here

Lower case 'and' should be used

```
1 colour == input()
2 suit = input()
3 if colour != "red" AND suit = "hearts":
4     print("My card is a match")
5 Else:
6     print("My card is not a match")
```

Double equals sign is required here

The 'E' should be lower case

Missing a final bracket

# Homework:

Complete the pizza program

Due: Next lesson

# Next lesson

## In this lesson, you...

Learnt how to use **and**, and **or** in your conditions

Created a pizza-cost calculator

## Next lesson, you will...

Learn about nested selection