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A company with a focus on education,  
wellbeing and renewable energy.

# Python Primer 102a

## Asking questions with IF and ELSE

# Dua of the day

The righteous dua that Abu Bakr (r) made at the end of his lifetime.

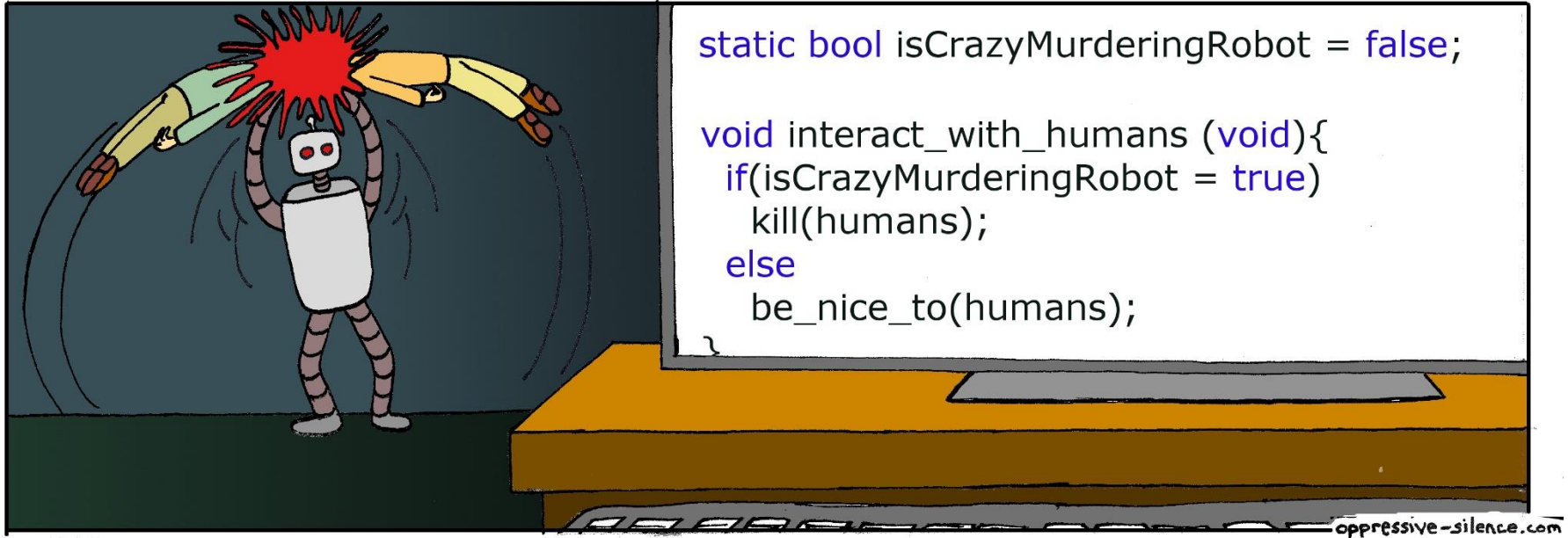
اللَّهُمَّ اجْعَلْ خَيْرَ زَمَانِي آخِرَهُ، وَخَيْرَ عَمَلِي خَوَاتِمَهُ، وَخَيْرَ أَيَّامِي يَوْمَ الْقَاكَ

“O Allah, let the best of my lifetime be its ending, and my best deed be that which I seal [my life with], and the best of my days the day I meet You.”

Reference: The Dua is taken from Sheikh Omer Sulaiman Dua Compilation.

# Study, Rinse and Repeat

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- Please review the notes daily.
- Please take time for clearing up your mind and reflect on how things are proceeding in your studies.



# Conditions If and Else

In programming, we often ask yes or no questions, and decide to do something based on the answer.

For example, we might ask, “Are you older than 20?” and if the answer is yes, respond with “You are too old!”

**These sorts of questions are called conditions,** and we combine these conditions and the responses into **if statements**.

Conditions can be more complicated than a single question, and if statements can also be combined with multiple questions and different responses based on the answer to each question.

# IF Statements

age = 13

if age > 20:

    Print ('you are too old')

```
In [3]: age = 13
        if age > 20:
            Print ('you are too old')
```

An if statement is made up of the if keyword, followed by a condition and a colon (:), as in `if age > 20:`

The lines following the colon must be in a block, and if the answer to the question is yes (or true, as we say in Python programming), the commands in the block will be run.

Now, let's explore how to write blocks and conditions.

# Python Block

A BLOCK IS A GROUP OF PROGRAMMING STATEMENTS

A block of code is a grouped set of programming statements.

For example, when if `age > 20`: is true, you might want to do more than just print “You are too old!” Perhaps you want to print out a few other choice sentences, like this:



age = 25

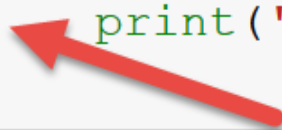
if age > 20:

print('You are too old!')

print('Why are you here?')

print('Why aren\'t you mowing a lawn or sorting papers?')

```
age = 25
if age > 20:
    print('You are too old!')
    print('Why are you here?')
    print('Why aren\'t you mowing a lawn or sorting papers?')
```



This space is created by pressing tab twice

You are too old!

Why are you here?

Why aren't you mowing a lawn or sorting papers?

This block of code is made up of three print statements that are run only if the condition `age > 20` is found to be true.

Each line in the block has four spaces at the beginning, when you compare it with the if statement above it. Let's look at that code again, with visible spaces:

# The importance of Space in Python

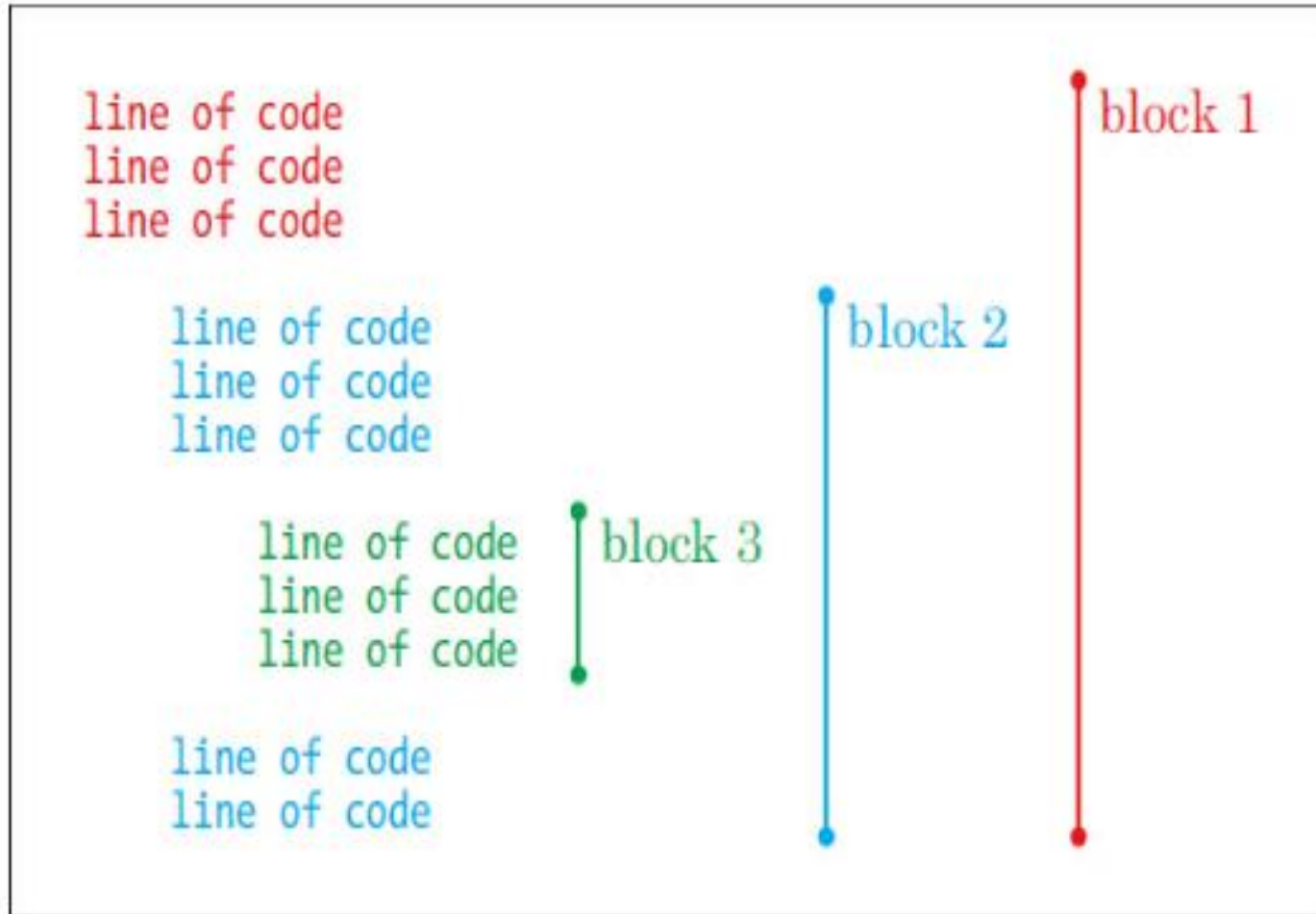
## Space equals block

In Python, whitespace, such as a tab (inserted when you press the TAB key) or a space (inserted when you press the spacebar), is meaningful. Code that is at the same position (indented the same number of spaces from the left margin) is grouped into a block, and whenever you start a new line with more spaces than the previous one, you are starting a new block that is part of the previous one, like this:

# Block means programming statements!!

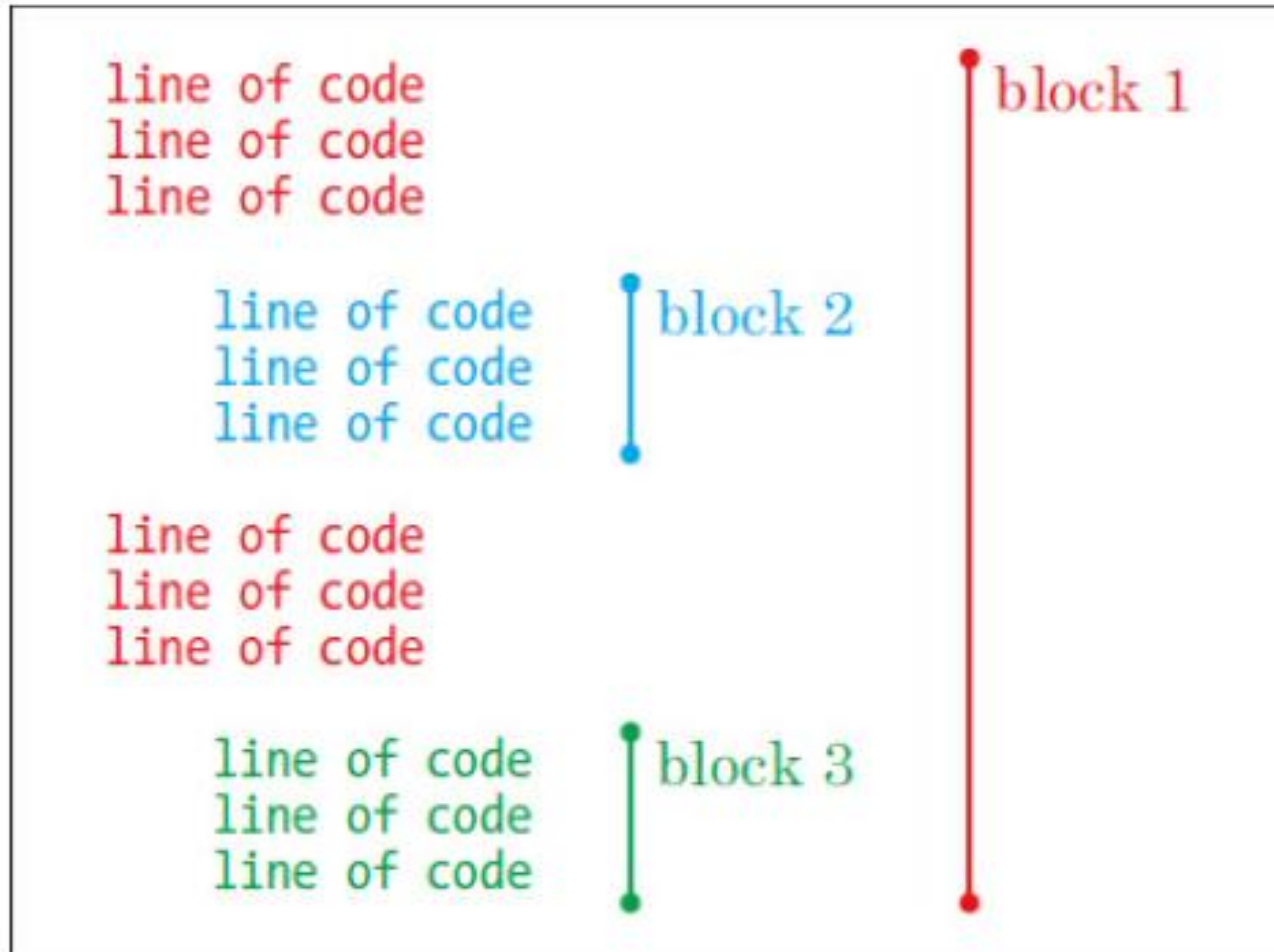
We group statements together into blocks because they are related. The statements need to be run together. When you change the indentation, you're generally creating new blocks.

The following example shows three separate blocks that are created just by changing the indentation.



We group statements together into blocks because they are related. The statements need to be run together. When you change the indentation, you're generally creating new blocks.

The following example shows three separate blocks that are created just by changing the indentation.



Here, even though blocks 2 and 3 have the same indentation, they are considered different blocks because there is a block with less indentation (fewer spaces) between them.

For that matter, a block with four spaces on one line and six spaces on the next will produce an indentation error when you run it, because Python expects you to use the same number of spaces for all the lines in a block.

# If the spaces are out of whack

```
age=21
if age > 20:
    print('You are too old!')
    print('Why are you here?')
    print('Why aren\'t you mowing a lawn or sorting papers?')
```

File "<ipython-input-43-255d82701839>", line 4

```
    print('Why are you here?')
```

^

**IndentationError:** unexpected indent

# Points to Remember for spacing

Use consistent spacing to make your code easier to read. If you start writing a program and put four spaces at the beginning of a block, keep using four spaces at the beginning of the other blocks in your program.

Also, be sure to indent each line in the same block with the same number of spaces.



# جزاك الله

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