Pretest Basic Linux and Coding for Astronomy and Astrophysics
Fill out the survey questions and answer the quizzes.

1. Name:

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2. Student number:

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3. Your UvA email adress:

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4. Your email address (for communication during this course):

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5. Do you own a laptop that you can use for this course? ◯ Yes ◯ No

1 Survey questions

1.1 Courses

1. Which academic program are you in?

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2. At which university did you receive you bachelor's degree, and in what program?

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3. Please list the programming subjects that were part of your bachelor's curriculum.

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4. Did you receive any other teaching in programming? Please describe.

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1.2 Computer experience

5. Which operating systems are you comfortable using? Check more than one option if you want.

   ◯ Windows ◯ Mac OS X ◯ Linux / BSD ◯ Other: _____

6. Do you use command line interfaces? Check one option.

   ◯ Never ◯ Hardly ever ◯ Sometimes ◯ Often ◯ All the time

1.3 Programming experience

7. Do you write computer programs or scripts? Check one option.

   ◯ Never ◯ Hardly ever ◯ Sometimes ◯ Often ◯ All the time

8. If you are currently programming check the appropriate box(es). You are programming:

   ◯ As a hobby. ◯ For your studies. ◯ For work.

9. Which programming languages or systems did you use?

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1.4 Expectations

10. Do you intend to specialize in a computational subject within physics / astronomy / astrophysics?

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11. What expectations do you have of this course?

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12. What programming techniques would you like to learn? (In this course or another.)

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2 Quiz

2.1 General programming background

Give a short description of the following terms (if you can). Your grade will in no way depend on this!

1. function

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2. source code

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3. class

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4. scope

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5. array

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6. recursion

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7. iterator

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2.2 Python background

This section contains a quiz to see what your general Python level is. Your grade will in no way depend on this!

1. Using the following definitions:

```
a = 'fiz'
b = 3.1415
c = 55
```

   What are value **and** type for each of the following expressions?

   (a) `3 * a + 'buz'`

   (b) `b / 2.`

   (c) `float(c / 10)`

   (d) `int(b / 2) + 2`

2. Which of the following line(s) use(s) correct Python syntax?

   - ◯ `t = t * 5 + 2`
   - ◯ `t /= 11`
   - ◯ `t =* 5`
   - ◯ `t =- 6`

3. Which of the following define(s) a dictionary?

   - ◯ `d = ['f': 6, 'p': 4]`
   - ◯ `d = {a: 6, y: 1}`
   - ◯ `d = ('a', 'b', 'c', 'd')`
   - ◯ `d = dict([('a', 10), (5, False)])`

4. Which of the following lines define(s) a list?

   - ◯ `l = ['1', None, '7']`
   - ◯ `l = (a, b, c, d)`
   - ◯ `l = list('xyz')`
   - ◯ `l = {1, 9, 2}`

5. The following snippet contains an error:

```
def is_palindrome(word):
    reversed_word = word

    L = len(word)
    for i in range(L):
        reversed_word[i] = word[L - i - 1]
    if reversed_word == word:
        return True
    return False

is_palindrome('paling')
```

   (a) Please explain what error this code contains.

   (b) Please rewrite the code so that the bug is fixed.

6. The following function checks whether a word is an isogram. An isogram is word that contains no repeating characters. For example the word "spaceflight" is an isogram, while "boom" is not.

```
def is_isogram(word):
    return len(set(word.lower())) == len(word)

is_isogram('spaceflight')
```

   (a) Rewrite the program such that it uses a `for`-loop.

7. Evaluate the following boolean expressions and write down what they evaluate to.
   (a) `(True or False) and False`

   (a) _____

   (b) `not (False and not True)`

   (b) _____

   (c) `(False or True) or not (False and True)`

   (c) _____

   (d) `True and (not False or False)`

   (d) _____

8. Explain the following keywords:
   (a) **`assert`**

   (b) **`except`**

   (c) **`from`**

   (d) **`or`**

9. Write a function `factorial(n)` that calculates the factorial of a integer number `n`. Both solutions with a loop and using recursion are admissible.

10. What is the point of using the `pass` keyword?