

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

Name: _____

Student number: _____

1 Survey questions

1. Which academic program are you in?

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2. At which university did and in which program did you get your bachelor's degree?

.....

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

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

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

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

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

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

6. Which programming languages or systems did you use?

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7. What expectations do you have of this course?

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8. What programming techniques would you like to learn?

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9. Do you own a laptop that you can use for this course? ☐ Yes ☐ No

2 Quizz

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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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):  
    letters = []  
  
    for letter in word:  
        if letter in letters:  
            return False  
        letters.append(letter)  
    return True
```

`is_isogram('spaceflight')`

- (a) Rewrite the program such that it uses a while-loop and not 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?