Take Test: Self-check: L6-Numerical Analysis with NumPy

Test Information

Description	A set of multiple choice questions to help you test your understanding of this week's material. This formative test is provided to support you in your learning. **This test does not count towards your mark!**
Instructions	
Multiple Attempts	This Test allows multiple attempts.
Question Completion Status:	
Completion	Your answers are saved automatically.

QUESTION 1 **10 points** Save Answer

```
import ____ as np

A = np.____.rand(2,5)

# Compute the mean of each column

np.____(A, axis =
____)
```

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

QUESTION 2 **10 points** Save Answer

```
# What is returned by the following code ?
X = np.array([[1,2,3],[4,5,6]])
X[np.logical_and(X >= 3, X <= 5)]
```

- A vector containing the elements of A that are larger or equal to 3 and smaller and equal to 5
- An error: You cannot index a matrix with the result of np.logical_and
- A matrix containing the elements of A that are larger or equal to 3 and smaller and equal to 5

Question Completion Status:

QUESTION 3 **10 points** Save Answer

```
# If A is a NumPy matrix, what is computed
by the following ?

A * A
```

- An error: we cannot multiply matrices with other matrices in this way.
- A matrix like A but each element is squared (like A**2)
- The matrix product of A with itself.
- A new matrix that is made of A copies of A

Click Save and Submit to save and submit. Click Save All Answers to save **10 points** Save Answer

We have a vector x of length 5 and a matrix A of shape (5,5). We want to sum each element of x_i to the corresponding element A_{ij} of each column j of A. How can we do that in Python?

- [ ] **`np.sum(x.reshape((5,1)), A)`**
- [ ] **`np.sum(x, A)`**
- [ ] **`x + A`**
- [ ] **`x.reshape((5,1)) + A`**

QUESTION 5 **10 points** Save Answer

What are the benefits of using NumPy instead of lists and loops?

- [ ] Numpy vector/matrix operations are more professional.
- [ ] You should never use lists.
- [ ] Numpy already implements many mathematical operations.
- [ ] Numpy vector/matrix operations are easier to read.
- [ ] Numpy vector/matrix operations are faster than loops.
- [ ] You should never use for-loops

Question Completion Status:

QUESTION 6 **10 points** Save Answer

If `a` is a numpy array then `a * 2` computes

- ○ Exactly the same as **a.append(a)**
- ○ A new array that is the result of appending **a** to itself.
- ○ A new array where each element of **a** is multiplied by 2.
- ○ A new array where each element of **a** is squared

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

If `a` is a numpy array then `a + a` calculates

- A string that is the concatenation of **a** with itself.
- Exactly the same as **a.append(a)**
- A new array that sums each element of **a** with itself.
- A new array that is the result of appending **a** to itself.

QUESTION 8

10 points Save Answer

If `a` is a list then `a * 2` computes

- A new list where each element of **a** is multiplied by 2.
- Exactly the same as **a.append(a)**
- A new list that is the result of cocatenating **a** to itself.
- A new list where each element of **a** is squared.

Question Completion Status:

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