Python Assignment Solutions

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1. LAMBDA FUNCTIONS & MAP:

```
squared_numbers = list(map(lambda x: x ** 2, range(1, 21)))
print("Squared numbers from 1 to 20:", squared_numbers)
```

2. CUSTOM MODULE CREATION AND IMPORTING:

```
# Create a module named utilities.py with the following content:

# utilities.py
def factorial(num):
    if num == 0 or num == 1:
        return 1
    else:
        return num * factorial(num - 1)

# Save the above code as utilities.py and then import it:

import utilities

for i in range(1, 11):
    print(f"Factorial of {i}:", utilities.factorial(i))
```

3. EXCEPTION HANDLING IN FUNCTIONS:

```
def divide(x, y):
    try:
        result = x / y
    except ZeroDivisionError:
        return "Error: Division by zero is not allowed."
    except TypeError:
        return "Error: Input values must be numbers."
```

```
    else:
        return result

print(divide(10, 2))
print(divide(10, 0))
print(divide(10, 'a'))

4. USING EXTERNAL MODULES:
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# Install numpy using: pip install numpy

import numpy as np

matrix = np.random.randint(0, 11, (2, 3))
print("Generated Matrix:\n", matrix)

transpose_matrix = matrix.T
print("Transpose of Matrix:\n", transpose_matrix)

5. LAMBDA FUNCTION WITH FILTER:
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odd_numbers = list(filter(lambda x: x % 2 != 0, range(1, 51)))
print("Odd numbers from 1 to 50:", odd_numbers)
```