**Python Practice Overview**

**1. Palindrome Checker**

**Purpose:**

* Check whether a given string (from user input) is a palindrome.

**How it works:**

* Reads a string from the user.
* Compares the string with its reverse.
* Returns whether the string is a palindrome.

**Concepts Demonstrated:**

* String manipulation
* Conditional statements
* User input handling

**Output:**

**A screen shot of a computer

AI-generated content may be incorrect.**

**2. List Comprehension – Squares**

**Purpose:**

* Generate a list of squares from a given list of numbers.

**How it works:**

* Uses list comprehension to iterate over numbers and calculate their squares.
* Returns a new list containing the squared values.

**Concepts Demonstrated:**

* List comprehension
* Loops and iteration
* Mathematical operations

**Output:**

**A black screen with white text

AI-generated content may be incorrect.**

**3. Students DataFrame**

**Purpose:**

* Create a DataFrame of 5 students with marks and analyze their scores.

**How it works:**

* Uses pandas.DataFrame to store student names and marks.
* Filters and displays students who scored more than 80.

**Concepts Demonstrated:**

* pandas DataFrame creation and manipulation
* Filtering data
* Conditional selection

**Output:**

**A screen shot of a computer

AI-generated content may be incorrect.**

**4. Random 5x5 NumPy Array**

**Purpose:**

* Generate a 5x5 array with random integers between 1 and 100.

**How it works:**

* Uses numpy.random.randint to create the array.
* Displays the array for analysis.

**Concepts Demonstrated:**

* NumPy arrays
* Random number generation
* Array manipulation

**Output:**

**A computer screen with white text

AI-generated content may be incorrect.**

**5. Products DataFrame**

**Purpose:**

* Create a DataFrame with product details and perform simple calculations.

**How it works:**

* Stores product name, price, and category in a pandas DataFrame.
* Adds a new column for discounted price (90% of original price).
* Filters and displays products cheaper than 500.

**Concepts Demonstrated:**

* DataFrame operations
* Column calculations
* Data filtering

**Output:**

**A screenshot of a computer

AI-generated content may be incorrect.**