



## Lab 10: List Comprehension

### Task: Transforming Data Using List Comprehensions

#### Objective

The objective of this task is to introduce students to Python list comprehensions and demonstrate how they can be used to create, filter, transform, and flatten lists efficiently. Students will perform multiple operations using only comprehensions for cleaner and more readable code.

#### Task Description

The goal of this lab is to apply list comprehensions to different dataset transformation scenarios. Students will generate number lists, filter values, apply conditional expressions, and flatten nested lists—all using compact comprehension syntax.

#### Task 1: Basic list comprehension

Create numbers from 0 to 9:

```
In [1]: nums = [i for i in range(10)]  
print(nums)
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
```

#### Task 2: Keep only even numbers

```
In [2]: evens = [n for n in nums if n % 2 == 0]  
print(evens)
```

```
[0, 2, 4, 6, 8]
```

#### Task 3: Conditional expression inside comprehension

```
In [3]: result = ["even" if n % 2 == 0 else "odd" for n in nums]  
print(result)
```

```
['even', 'odd', 'even', 'odd', 'even', 'odd', 'even', 'odd', 'even', 'odd']
```

#### Task 4: Nested list comprehension (flatten list)

```
In [4]: data = [[1, 2], [3, 4]]  
flat = [x for sub in data for x in sub]  
print(flat)
```

```
[1, 2, 3, 4]
```