

# Foundations in Business Programming

## Fall 2025 Midterm

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- Read these instructions carefully.
- Do *not* turn this page until you are instructed to do so.
- Fill in your personal info as indicated above.
- You have the whole class (1 hr 20 min).
- There are **20** questions, each question is weighted equally.

# 1 Multiple Choice Questions

**1.1 Which expression creates a set of unique elements from a list L that may contain duplicates?**

1. `set(L)`
2. `dict(L)`
3. `list(L)`
4. `tuple(L)`

**1.2 What does the slice `s[::-1]` do for a list or string `s`?**

1. Returns every other element starting at index 1
2. Returns a copy of `s` without the first element
3. Returns `s` reversed
4. Raises an error for negative steps

**1.3 Which comprehension builds a list of uppercase first letters for words of length at least 4 in words?**

1. `[w[0].upper() for w in words if len(w) >= 4]`
2. `{w[0].upper(): w for w in words if len(w) >= 4}`
3. `(w[0].upper() for w in words if len(w) >= 4)`
4. `[w.upper()[0] if len(w) < 4 for w in words]`

**1.4 What does `enumerate(items)` produce in a for loop?**

1. The values of `items` followed by their indices
2. Pairs (`index`, `value`) where the first index is 1
3. Pairs (`value`, `index`) where the first index is 0
4. A list of indices only

**1.5 Which file mode appends text and creates the file if it does not exist (without truncating)?**

1. `"r"`
2. `"w"`
3. `"a"`
4. `"x"`

**1.6 Which statement about while loops is true?**

1. `while` requires an `else` clause to run
2. A `continue` in a `while` loop immediately starts the next evaluation of the loop condition
3. `break` in a `while` loop restarts the loop
4. The loop variable increments automatically

## 1.7 Choose ALL snippets that print exactly a,b,c

1. `vals = ["a","b","c"]`  
`print(",".join(vals))`

2. `for v in ["a","b","c"]:`  
`print(v, end=",")`

3. `print("a,b,c")`

4. `vals = ["a","b","c"]`  
`print(vals, ",")`

## 2 True/False Questions

- 2.1 Dictionary keys are unique and ordered from smallest key to largest. (True/False)
- 2.2 `range(5)` produces the sequence 0,1,2,3,4. (True/False)
- 2.3 Functions in python can be defined to have no inputs and/or no outputs. (True/False)
- 2.4 Iterating directly over a dictionary yields its keys by default. (True/False)
- 2.5 `try/except` blocks are redundant, they can be replaced with `if/elif/else`. (True/False)
- 2.6 A Python list can itself contain lists. (True/False)

## 3 Code Problem Identification & Short Traces

### 3.1 What is printed by this code?

```
d = {"a": 1, "b": 2, "c": 3}
for k, v in d.items():
    if k == "b":
        break
    print(v)
```

1. 1
2. 2
3. 1  
3
4. Nothing is printed

### 3.2 What is the value of nums after this executes?

```
nums = [1, 2, 3]
nums.append([4, 5])
```

1. [1, 2, 3, 4, 5]
2. [1, 2, 3, [4, 5]]
3. [1, 2, 3]
4. Raises a TypeError

### 3.3 Evaluate the following and choose the printed result.

```
def g(a, b=0, *args, **kw):
    return b + kw["x"] + len(args)
```

```
print(g(5, 1, 7, 8, x=2))
```

1. 3
2. 4
3. 5
4. 9

### 3.4 Consider the loop. What is printed?

```
s = 0
i = 0
while i < 3:
    i += 1
    if i == 2:
        continue
    s += i
print(s)
```

1. 2
2. 3
3. 4
4. 5

## 4 Open Ended Questions

- 4.1 Write a function "oddVals" that as input a list L and returns a new list containing the elements at odd indices of L.
- 4.2 Write a short program that opens a file named "nums.txt", which is just a long file with some integer on each line, and computes the average of the integers it contains.
- 4.3 Write a one-line list comprehension that, given `nums = [3, 6, 9, 12, 15]`, produces a new list of the cubes the numbers in `nums`.