Python Week 1 - Multiple Choice Questions

Lecture 1 & 2: Algorithms and GCD

1. What is an algorithm?

- A. A Python library
- B. A way to represent data
- C. A systematic method to perform a task
- D. A set of programming languages

Answer: C

2. Which of the following is a valid algorithm to compute gcd(m, n)?

- A. Multiply m and n
- B. Add all numbers between m and n
- C. List all factors of m and n, then find the largest common one
- D. Subtract m from n repeatedly

Answer: C

3. What does the following Python code compute?

```
for i in range(1, m+1):
    if m % i == 0:
        fm.append(i)
```

- A. Prime numbers
- B. Factors of m
- C. Even numbers up to m
- D. Powers of m

Answer: B

4. What will gcd(18, 25) return?

- A. 9
- B. 3

- C. 1
- D. 6

Answer: C

5. Why is it better to loop from 1 to min(m, n) when computing the GCD?

- A. Because min(m, n) is always a prime
- B. Because the GCD cannot be greater than min(m, n)
- C. Because Python only supports that range
- D. To avoid syntax errors

Answer: B

6. What is the purpose of the variable mrcf in the optimized GCD code?

- A. To store the smallest factor
- B. To store the most recent common factor
- C. To loop through numbers
- D. To return None

Answer: B

7. What is the advantage of scanning backwards (from min(m, n) to 1)?

- A. It finds the smallest factor
- B. It uses fewer variables
- C. The first common factor found is the GCD
- D. It prints all common factors

Answer: C

8. What kind of loop is used in this GCD version?

```
while i > 0:
    if (m % i == 0 and n % i == 0):
        return i
    i = i - 1
```

- A. Infinite loop
- B. Deterministic loop
- C. While loop with unknown number of iterations
- D. For loop

Answer: C

Lecture 3: Euclid's Algorithm

9. Euclid's algorithm is based on which principle?

- A. Multiplying two numbers until they match
- B. Repeated subtraction or modulus
- C. Listing all prime factors
- D. Multiplying m and n

Answer: B

10. In Euclid's algorithm, what does gcd(m, n) = gcd(n, m % n) rely on?

- A. Division rule
- B. Multiplication rule
- C. Remainder carries all common divisors
- D. m must be smaller than n

Answer: C

11. Which version is the most efficient implementation of Euclid's algorithm?

- A. Using subtraction
- B. Using difference of m and n
- C. Using modulus (%)
- D. Using factors list

Answer: C

12. If gcd(119, 34) is computed using Euclid's algorithm, which is the first step?

- A. gcd(119, 34) → gcd(34, 119)
- B. gcd(34, 17)
- C. gcd(34, 119 % 34)
- D. gcd(17, 34)

Answer: C

13. How does the efficiency of Euclid's algorithm compare to the naive method?

- A. Slightly slower
- B. Depends on compiler

- C. Much faster — takes steps proportional to number of digits
- D. Same time for all inputs

Answer: C

Lecture 4: Python Installation and Basics

14. Which version of Python is recommended in this course?

- A. Python 2.7
- B. Python 3+
- C. Python 1.0
- D. Jython

Answer: B

15. What is the key difference between a compiler and an interpreter?

- A. Interpreter converts to C++
- B. Compiler runs the code step-by-step
- C. Interpreter executes code directly
- D. Compiler uses Python shell

Answer: C

16. What is true about Python being an interpreted language?

- A. Code must be compiled first
- B. It cannot run in interactive mode
- C. You can test commands directly in the interpreter
- D. Requires a virtual machine

Answer: C

17. Which of the following is NOT a recommended resource in the lecture?

- A. Think Python by Allen Downey
- B. W3Schools Python Guide
- C. Dive into Python 3 by Mark Pilgrim
- D. Python's official tutorial

Answer: B

18. What is the suggested way to learn programming, according to the handout?

- A. Memorize code snippets
- B. Read theory books
- C. Watch videos only
- D. Write and execute code yourself

Answer: D