A.1. Consider the following definition of P and identify what P is.

"P is a computer program that translates computer code written in one (high-level) programming language (the source language) into another (lower level) language (the target language) to create an executable program."

- ○ Assembler
- ○ Linker
- ● Compiler
- ○ Interpreter

The compiler "translate" available machine code and execute machine code

A.2. Which of the following is NOT the name of a programming language?

- ● Anaconda — distribution for Python and R
- ☐ C#
- ● Eclipse — IDE not programming language
- ☐ Go
- ☐ Lua
- ☐ Perl
- ☐ Ruby
- ● Sublime — text editor

A.3. Name at least two IDEs that support C/C++ programming (not to mention Visual Studio). Are they open-source tools?

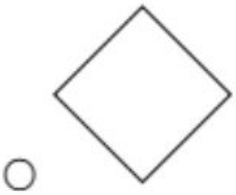
- IDEs: Code::Blocks, Dev-C++

-They are open-source tools, anyone can inspect, modify, enhance

A.4. Which of the following figures represents a step, which may be some basic task or action, in the process?

process or action

input or output



Conditional block

Start - end

A.5. Assume that the currency rate from USD to VND is 1 USD = 23,181 VND. The following program converts a given amount of US dollars to Vietnam Dong. Which type of errors that the program commits?

```
1    float fromUSDtoVND(float dollars){
2        return 23.181 * dollars;
3    }
```

don't have main function, don't include a library --> syntax error

A.6. Define the following terms: *computer program*, *programming*, and *algorithm*.

*Computer programming: art of implementing abstract algorithms

*Programming: writing, testing, and maintaining code to create software applications

*Algorithms: a finite set define instruction to solve problems

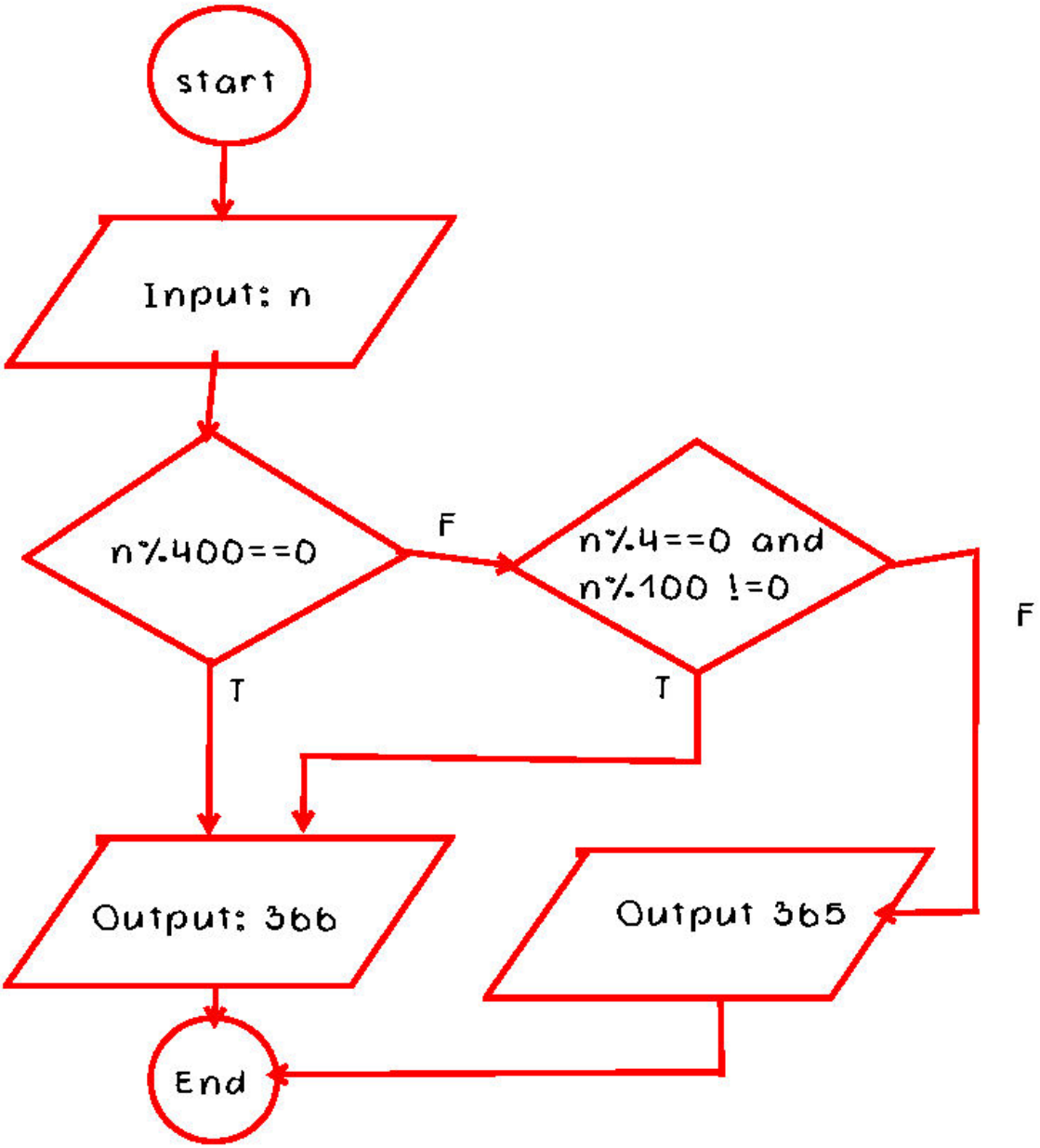
A.7. Name all approaches to represent an algorithm. Which one do you prefer? Explain why.

* -Natural language
  -Machine code
  -pseudo code
  -source code

*I prefer flowchat, its easy to understand

A.8. Design an algorithm by using flowchart to solve the following problem.

Given a year (which is a positive integer). Check whether the given year is a leap year, and then output the corresponding number of days in that year.



A.9. Design an algorithm by using pseudo-code to solve the following problem.

Given 8 coins that look identical to each other, yet one coin is heavier than the others. Also given a pan balance. Find the heavy coin in the minimum number of measurements.

A.10. Consider a program that prompts the user to iteratively input five numbers and then prints out the sum of given numbers. Identify the errors in the following flowchart and then correct them if there is any.