

1. (20%) Explain the difference between:
 - (a) function and subroutine (in programming)
 - (b) static and dynamic variables (in programming)
 - (c) stack and queue (in data structure)
 - (d) cache and buffer (in computer architecture)
 - (e) call by value and call by reference (in programming)

2. (20%) Describe the following terms:
 - (a) *inheritance* (繼承) in OOP
 - (b) *polymorphism* (多形) in OOP
 - (c) *gateway* in network
 - (d) *Domain Name Server (DNS)* in network (TCP/IP)

3. (20%) Write a function with your favor computer language (or use pseudo language) to return the number of match between an input string and an input target character.

4. (20%) Describe the basic function requirements of an Operation System in a computer and list two operation systems that you are familiar with then state their advantages and disadvantages.

5. (20%) In general, a host (CPU) can communicate with its peripheral (I/O) devices by: polling, interrupt or direct memory access. Describe and compare these three approaches and illustrate one device for each approach.