An Introduction to Computer Networks

Principle: Layering

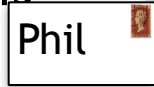# Layering

Layer k+1

data

Layer k

data

Layer k-1

Layers are functional components.

Layers communicate sequentially with the layers above and below.

Each layer provides a well-defined service to the layer above, using the services provided by layers below and its own private processing.
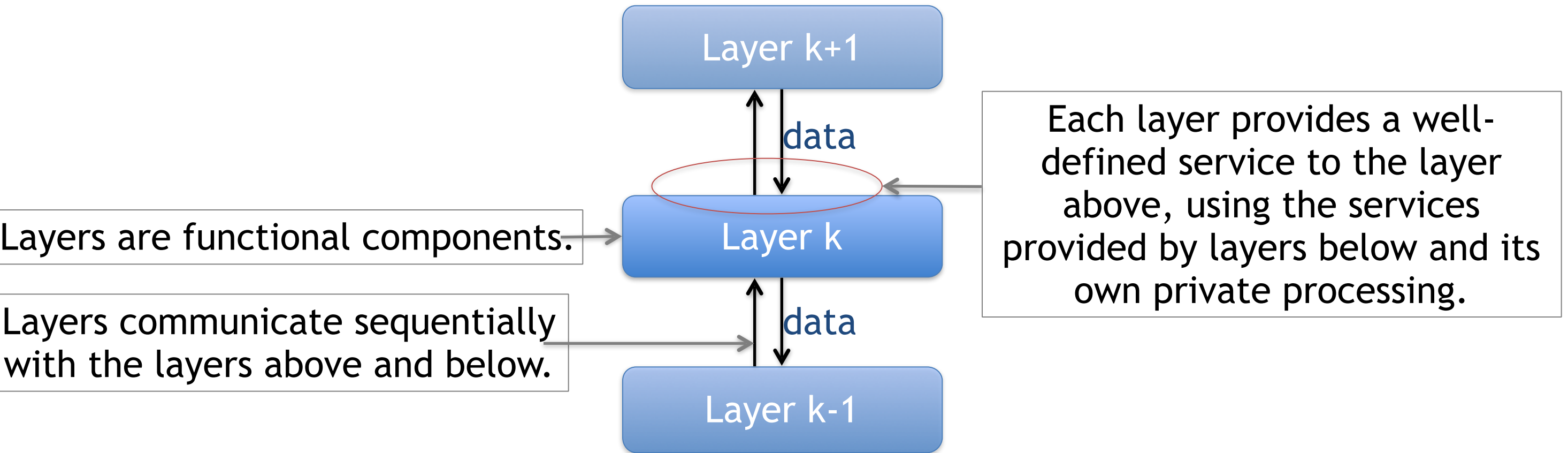
Layering in the postal service

Layering in a computer system

edit

```
… … … …
printf("Hello world.\n");
… … … …
```

Source code

compile

Lexical analysis
Parsing
Preprocessing
Code generation and optimization

Object code

link

Link compiled object files and libraries

Executable

execute

Run!

Layering in a computer system

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Reasons for layering

1. **Modularity**
2. **Well defined service**
3. **Reuse**
4. **Separation of concerns**
5. **Continuous improvement**
6. **Peer-to-peer communications**