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Computer Systems B

COMS20012

Introduction to Operating Systems and Security

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File handles

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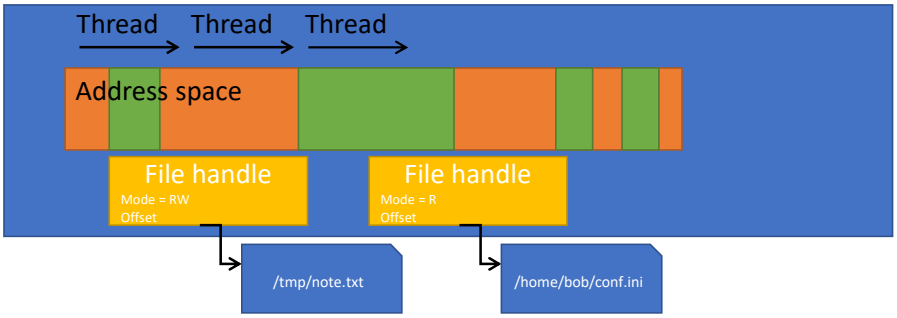
Previously in COMS20012

- Processes abstraction



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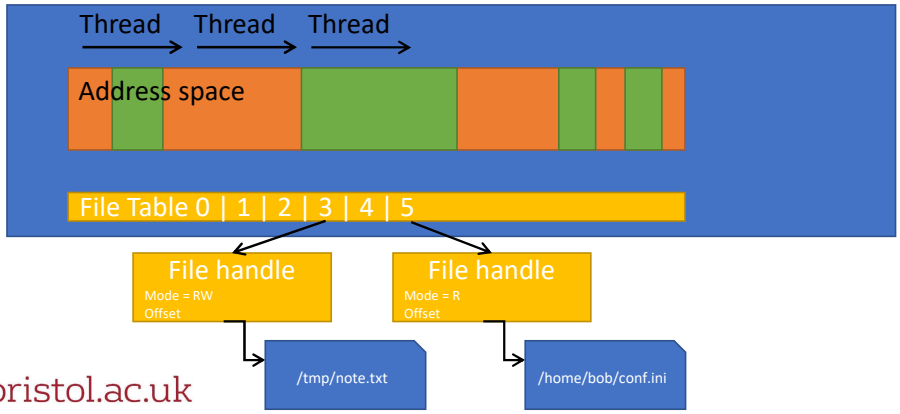
Revised process model

- How process use files is important for today



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File handles

- **File descriptor** an integer representing the index of a file in the file table.
  - Value returned by the *open* system call.
- This integer correspond to a **file handle** maintained by the kernel
- Which reference a **file object** also maintained by the kernel
- The file object is then mapped to **blocks** on disk
- Three level of indirection
  - File descriptor -> file handle
  - File handle -> file object
  - File object -> blocks

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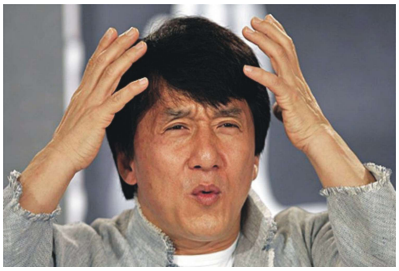
- **Why?**



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Sharing file states

- The additional levels of indirection allows file states to be shared separately
- **File descriptors** are **private** to each process
- **File handles** are **private** at process creation but **can be shared**.
  - Store file **offset** were next read/write will take place
  - Can be **deliberately shared** between processes
- File objects hold other file states and is **shared transparently** between processes

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File systems

- To be continued in **Week 9**

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Thank you

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