

WRAP-UP

CS 045

Computer Organization and
Architecture

Prof. Donald J. Patterson
Adapted from Bryant and O'Hallaron,
Computer Systems:
A Programmer's Perspective, Third Edition

TOPICS COVERED

- Understanding why asymptotic complexity isn't the whole picture
- Understanding the compilation process from
 - C
 - Assembly
 - Machine Language
 - Linker
 - File
 - Virtual Memory Mapping
 - To Caching
 - To Processor
 - To execution



TOPICS COVERED

- Linux
 - Distributions
 - Basic Commands
- C
 - Numbers
 - Boolean
 - Struct
 - Array
 - If-else
 - Switch
 - Pointers/Memory



TOPICS COVERED

- Representation of
 - bits
 - bytes
 - integers
 - binary
 - decimal
 - hexadecimal
 - characters
 - 2's complement
 - Floating Points
- Big Endian/Little Endian
- Conversion Casting



TOPICS COVERED

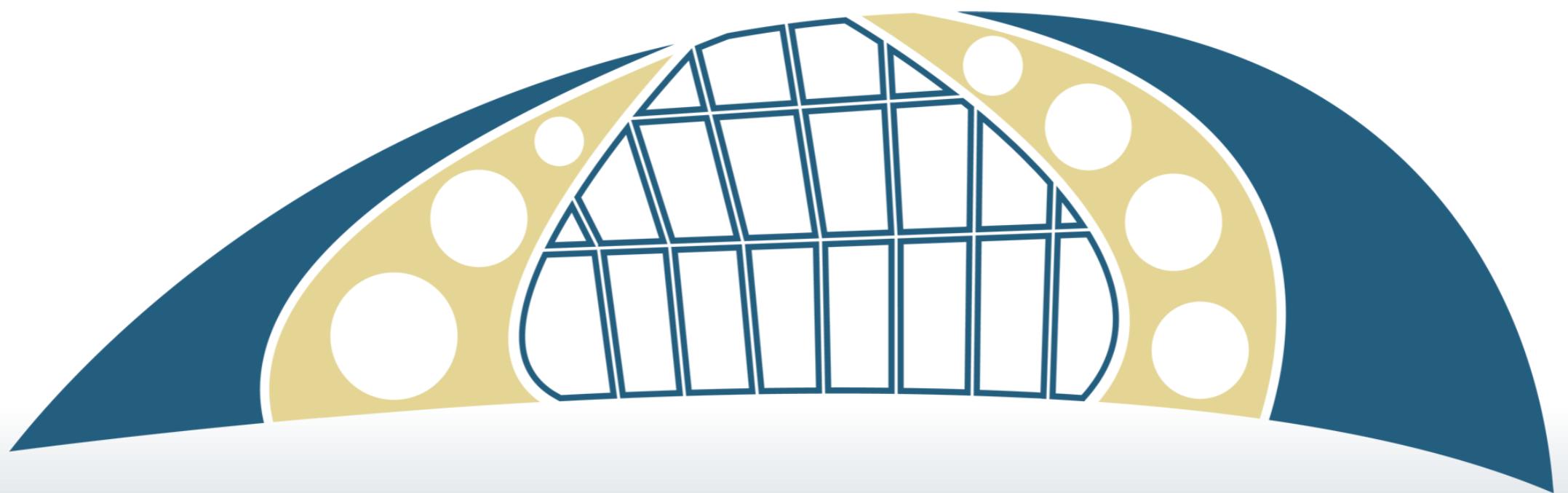
- Machine Programming
- X86-64 architecture
- Assembly language
- registers
 - conventions
- Assembling and disassembling machine code
- leaq
 - Address manipulation
- The stack
 - function calls
 - function call frames on the stack
- Control flow
 - Condition Codes
 - Switch statements and jump tables



TOPICS COVERED

- Array representation
- Structure representation
- Memory referencing bugs
 - buffer overflow
- Program Optimization
- Caching
 - L1,L2,L3
- Virtual Memory
 - Page table, TLB
- Linking





WESTMONT INSPIRED
— COMPUTING LAB —