SCHOOL OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

G51CSA

2002/2003 Revision Note

1. Number systems

- Decimal to binary conversion
- Binary to decimal conversion

- Hexadecimal to binary conversion
- Binary to hexadecimal conversion

Homework/Tutorial note #1

2. Computer Arithmetic (Lecture Slide #4, Lecture note #5)

Integer Number Representation

- Non negative integer representation
- Sign-magnitude representation
- Twos complement representation
- Integer arithmetic - Addition and Subtraction

Real number Representation

- IEEE single precision floating point format
- Floating point arithmetic - Addition and Subtraction

Homework/tutorial note #4

3. von Neumann Machine Concept (Lecture Slide #1, Lecture note #1 &2)

- Stored program concept
- Main memory storing programs and data
- Three major components: CPU, Memory and I/O

4. The Little Man Computer Model (Lecture Slide #2, Lecture note #3)

- Instruction set
- Program execution
- Little man computer programs

Homework/Tutorial note #2, Question 2, 3, 6, 7

5. Computer Systems Organisation (Lecture slide #3, Lecture note #4)

Bus Interconnection

- Address bus
- Data bus
- Control bus

The CPU

- ALU
- Register
- Control unit

The memory

- Memory organisation/architecture
- Memory address space
- Address bus size (bits) vs addressable locations
- Addressable locations vs each location's capacity

Address	Memory Content
1	10101110
2	11110101
3	11011000
. . .	. . .
128	10101111

The Little Man CPU Model (Extra material #2)

- Instruction fetch
- Instruction execution
- PC, IR, Acc, MDR, MAR

Homework/Tutorial note #3, Questions, 1, 2, 3, 6, 7,8

6. Memory Systems (Lecture slide #5, Lecture note #6)

Memory hierarchy

Cache memory

- Mapping algorithms, Direct, Associative, Set associative
- Replacement algorithm

Homework/Tutorial note #5

7. Operating Systems (Lecture slide #7, Lecture note #8)

Virtual Memory

- Page
- Frame
- Page Fault
- Page table
- Replacement policy, FIFO, LRU, LFU

Homework/Tutorial note #7, Questions 2, 3, 4