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# Bangladesh University

Assignment: 01

Course Title: Microprocessor and Assembly Language

Course Code: 2203



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Date: 17-11-2023

1 No Ans:

a. The usage of TPA and system area of the memory map of intel microprocessor.

TPA :

\* TPA is a region in memory used for temporary storing programming and data during execution.

System Area:

\* Reserve memory regions for system level function control

b. The platinum Pro processor memory architecture did not have fixed allocations of 384 MB for the system area and 640 KB for the TPA. Memory configuration depended on the specific system design, mother board and operating system. In x86 architecture, memory was traditionally divided into areas like conventional memory, upper memory and extended memory. The mentioned figures do not align with standard memory allocations for the pentium pro and any other x86 processor. For accurate details on memory allocations refer to the specific system documentation.

c. Designing a new memory map for a platform with 64 GB of memory involves considering architectures capabilities ensure compatibility with legacy code execution. Hence suggested design ideas.

conventional memory: size upto 4 GB  
purpose: Reserved for compatibility with legacy software that relies on the traditional 640 KB - 1 MB memory range.

Extended memory: Size The bulk of the memory, purpose Available for modern application are operating system that can utilize large memory space.

upper memory

Size : The bulk of the memory serves

purpose : Available for modern application

and operating system that can utilize

large memory space . Upper

memory space.

2 No Ans:

a) A microprocessor requires a control unit to manage instruction execution, decode instructions, control data flow, generate timing signals, synchronize operation, handle execution flow and exceptions, and interface with external devices. The control unit is for ensuring proper sequencing and efficient operation.

2. b) The interaction between microprocessor and memory unit is a crucial aspect of the microprocessor functionality. The control unit, which is part of the microprocessor, is responsible for managing this interaction. It includes tasks such as fetching instructions from memory, decoding them, and coordinating the movement of data between the memory unit and other components like registers and the arithmetic logic unit. This interaction forms a fundamental part of overall operation of the microprocessor, enabling the execution of instructions and the manipulation of data during program execution.



B.A

RISC (Reduced Instruction set computing) architecture. often require higher RAM to store code due to flowing reasons. Simply of instruction

RISC architectures have smaller single instruction set, which way require more instruction: to perform complex task.

B.B. For a Smartwatch with very little RAM consider a microcontroller such as the ARM cortex-m series e.g. cortex-m0 m3 or m4 Atmel AVR microchip PIC or IT MSP430, etc

for low power consumption integrated features like BLE and balance between clock speed and cost. Efficient code and memory management are crucial, Examples include STM32, nRF52 or EFM3 series.

### 3.5

RISC employs a streamlined set of simple instructions for efficient execution in a single clock cycle. CISC (Complex Instruction Set Computer) provides a diverse set of complex instructions, some handled more by hardware. RISC and CPUs are examples of specialized processors. Each architecture has

etc.