



Bangladesh University

Assignment: 01

Course Title: Microprocessor and Assembly Language

Course Code: 2203



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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 control, function control

b. The pentium Pro processor memory architecture did not have fixed allocations of 384 MB for the system area and 640 KB for the TPA. Memory configurations depended on the specific system design, motherboard and operating system. In x86 architecture memory was traditional 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 any other x86 processor. For accurate details on memory allocations refer to the specific system documentation.

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

conventional memory: size upto 4 GB
purpose: Reserved for compatibility with legacy software that relies on the traditional 64 KB - 1 MB memory range.

Extended memory: Size the bulk of the memory, purpose available for modern applications are operating system that can support large memory space.

upper memory

size: The bulk of the memory space

purpose: Available for modern application
and operating system that can utilize

large memory space

memory space.

Q No Ans:

- a) A microprocessor require a control
unit to manage instruction execution
decode instruction; control data flow
generate timing signal synchronize
operation handle execution flow
and exceptions, and interface with
external device the control unit
is for ensure proper sequence
and efficient operation.

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

B.A RISC (Reduced Instruction set computing)

architectures often require higher RAM to store code due to flowing memory. Simplicity of instruction

size architectures have smaller instruction sets, which may require more instructions to perform complex tasks.

B.B. for a smartphone with very little RAM consider a microcontroller such as the ARM cortex-m series e.g cortex-m0 or m4 parallel port microchip PIC or IT msp430.

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 MRE52 or FFM3 series

B.C

RISC employs a streamlined set of simple instructions for efficient execution in a single clock. CISC (Complex Instruction Set Computer) provide a diverse set of complex instructions to handle more by hardware RISC and CISC are examples of RISC, and CISC have higher clock frequency.