Mohsin Ali Mirza k200353 3E-BSCS

Q1 A compiler takes the source code and converts it into a machine language module called an object file. A linker combines this object file with other previous by compiled object files to create an executable file. Linker checks to see if the program contains any calls to procedures in a link library, combines them with other object files and produces an executable file. An OS loader loads these executable files into memory and branches the CPU to the program's starting address and it begins to execute.

Q2 Segment Register defines the starting address of the section of memory. In real-address mode, 16-bit segment registers indicate base address of pre-assigned memory areas, named segments. In protection mode, it selects a descriptor that describes the starting address and length of a section of memory holding code.

Q3i segment ABOEh offset = 5D89h

Real Address = segment * 10 + offset.

= (ABOEh * 10) + 5D89h

= B0E69h

Nadeem Ali Mirza 620383 3E-BSCS

h)
```
  8FE30
+ A835F
-------
 1852Fh
```

i) Segment = $\frac{\text{Real Address} - \text{offset}}{10}$

= F95Bh

j) A5B6 ÷ 2 =

Segment = 52DBh
offset = 52DBh

Q4 Java programming language is clear based and object oriented language. It is platform independent since its the compiled code can be run on any java supporting platform. When the program runs in a machine it is sent to java compiler which converts the code into byte code, which is sent to Java virtual Machine (JVM), which resides in the RAM of OS. The JVM detects the platform and translates the byte codes to machine code.

Mohsin Ali Mirza k204353 3E7BSCS

Q5 Similarities

1. Both are modes of operation
2. Both creates 1MB of address space.

Differences

1. In Real Address mode, one can easily overwrite instructions which can cause the OS to crash.
2. Real Address doesn't give protection to memory.
3. Virtual Mode doesn't allow access to different parts of memory.

Q6 Status Flags: which report on the result operation. They are sign, zero, auxilary carry, parity, carry and over flow flag.

Control Flags:- They enable or disable certain operations of the microprocessor. In other words they determine how instructions are carried out. These flags are trap, interrupt and direction flag.