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HW 3

1. The two ways of generating a clock for a CPU are a simple clock oscillator or a (crystal) controlled clock oscillator. The crystal controlled clock oscillator is preferred because it uses three logic gates to improve efficiency and it runs at a much higher speed.

2. The synchronous memory is the dynamic random access memory (RAM) that is synchronized with a clock speed that the microprocessor is optimized for. It increases the number of instructions the processor can read and execute and it supports the read and write operations. The synchronous memory read cycle is the process of reading this previously stored data.

3 a.
```
num1 DWORD ?        ; unsigned 32-bit integer
num2 SDWORD ?       ; signed 32-bit integer
```
b.
```
num3 SDWORD 9876h   ; signed 32-bit integer
num4 SWORD 0A4h     ; signed 16-bit integer
```
C.
```
Str1 BYTE "Computer Architecture", 0   ; null terminated string
```
D.
```
MinutesInDay = 60 * 60 * 24   ; Using equal-sign directive
```

4.
```
Spring DWORD ABAEDC12h (Little Endian Order)
```

0000:	12	← lowest
0001:	DC	
0002:	AE	
0003:	AB	← highest

5. a. array1 SBYTE 91, 81, 71, -61, 51
b. ArrayLength = ($ - array1)

6. A String variable is declared using the reserved word BYTE because a String is an array of characters and each character is a byte.

7. ; Adding three 32-bit integers (AddTwo.asm)

```
.386
.model flat, stdcall
.stack 4096
ExitProcess PROTO, dwExitCode: DWORD

.code
main PROC
    mov  eax, 2
    add  eax, 3
    add  eax, 4

    INVOKE  ExitProcess, 0
main ENDP
END main
```