14.1

User-visible registers: These enable the machine- or assembly language  
programmer to minimize main-memory references by optimizing use of registers.

Control and status registers: These are used by the control unit to control the  
operation of the CPU and by privileged, operating system programs to control the  
execution of programs.

14.2 General purpose; Data; Address; Condition codes

14.3 Condition codes are bits set by the CPU hardware as the result of operations.

14.4 All CPU designs include a register or set of registers, often known as the program status word (PSW), that contain status information. The PSW typically contains condition codes plus other status information.

14.5

stage 1:The execution time will generally be longer than the fetch time. Execution will  
involve reading and storing operands and the performance of some operation.  
Thus, the fetch stage may have to wait for some time before it can empty its buffer.

Stage 2 A conditional branch instruction makes the address of the next instruction to be fetched unknown. Thus, the fetch stage must wait until it receives the next  
instruction address from the execute stage. The execute stage may then have to  
wait while the next instruction is fetched

14.6

Multiple streams: A brute-force approach  
● Prefetch branch target: When taking a branch it will also prefetched the instruction following the branch.  
● Loop buffer: Recently fetched instructions are put in a buffer, will cheek buffer for the target befor anything else  
● Branch prediction: Predicts if the branch will be taken and then gets subsequent instructions  
● Delayed branch: Making instructions occur later on.

14.7 These bits are referred to as a taken/not  
taken switch that directs the processor to make a particular decision the next time  
the instruction is encountered.

14.8

a/

Cộng hai bit lại 00000010 + 00000011 = 00000101

Vì không mang MSB nên carry flag 0

Không mang số 0 nên zero flag 0

Overflow khi arithmetic cho giá trị lớn hơn thanh ghi lưu trữ, đây k đúng nê được gán giá trị thấp là 0

Kết quả dương nên là sign flag 0

Even parity: có số 1 trong dãy bit nên là 1

Half-Carry flag: 0

b/

như giải thích trên

carry flag: 1

zero flag: 1

overflow flag: 1

sign flag: 0

even parity: 1

half-carry flag: 1

c/ result = 1101 1100

carry flag: 1

zero flag: 0

overflow flag: 0

sign flag: 1

even parity:0

half-carry flag:0