

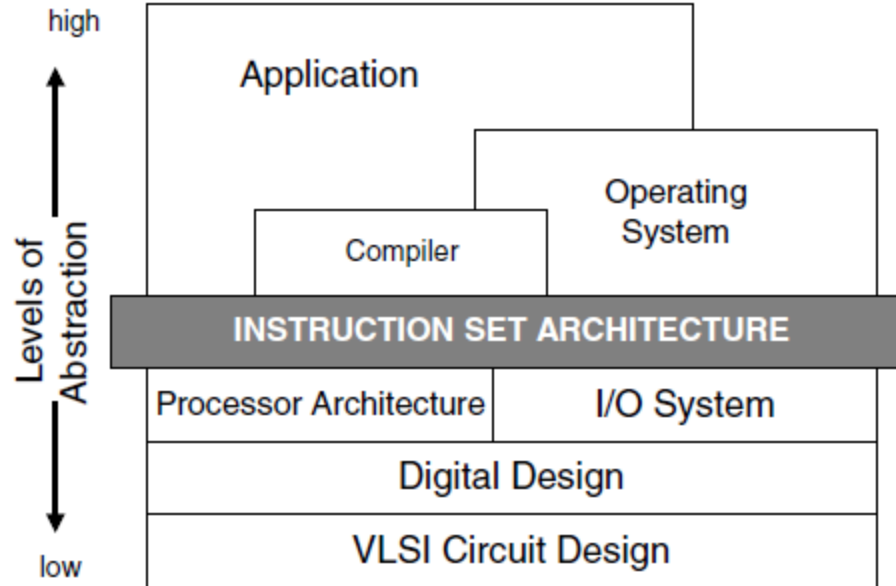
COMPUTER SYSTEMS ORGANIZATION

Introduction -- Spring 2010 -- IIIT-H -- Suresh Purini

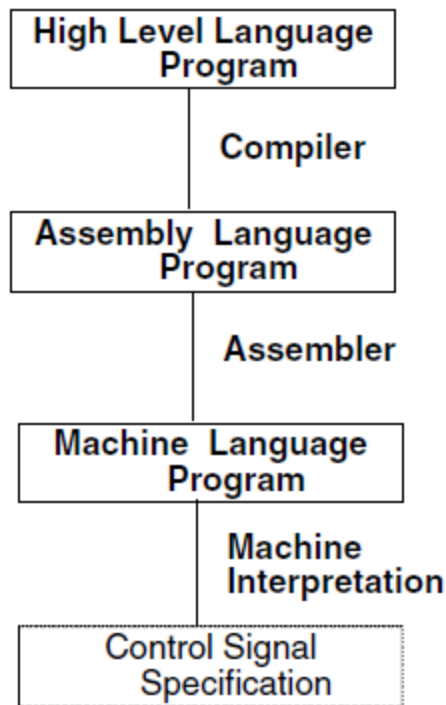
ISA: Hardware – Software Interface



ISA: Hardware – Software Interface



ISA: Hardware – Software Interface

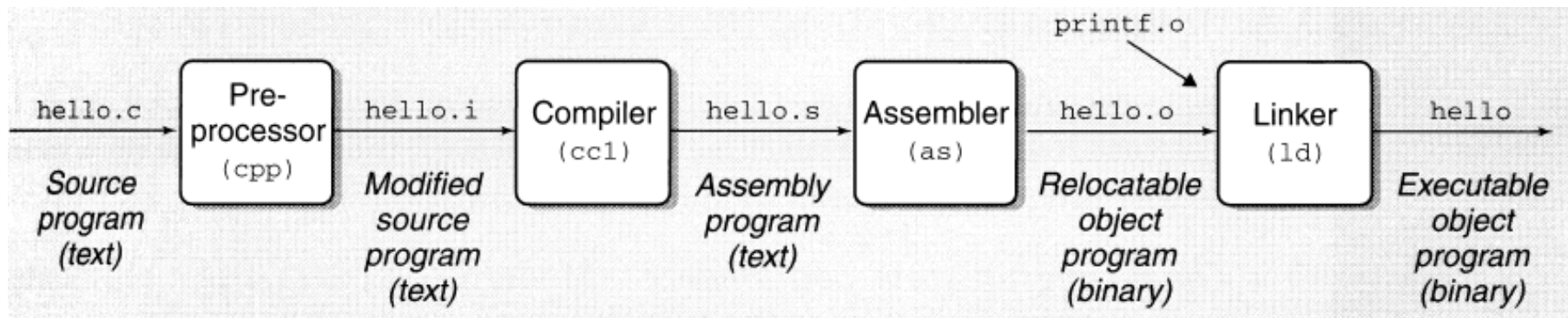


```
temp := v[k];  
v[k] := v[k+1];  
v[k+1] := temp;
```

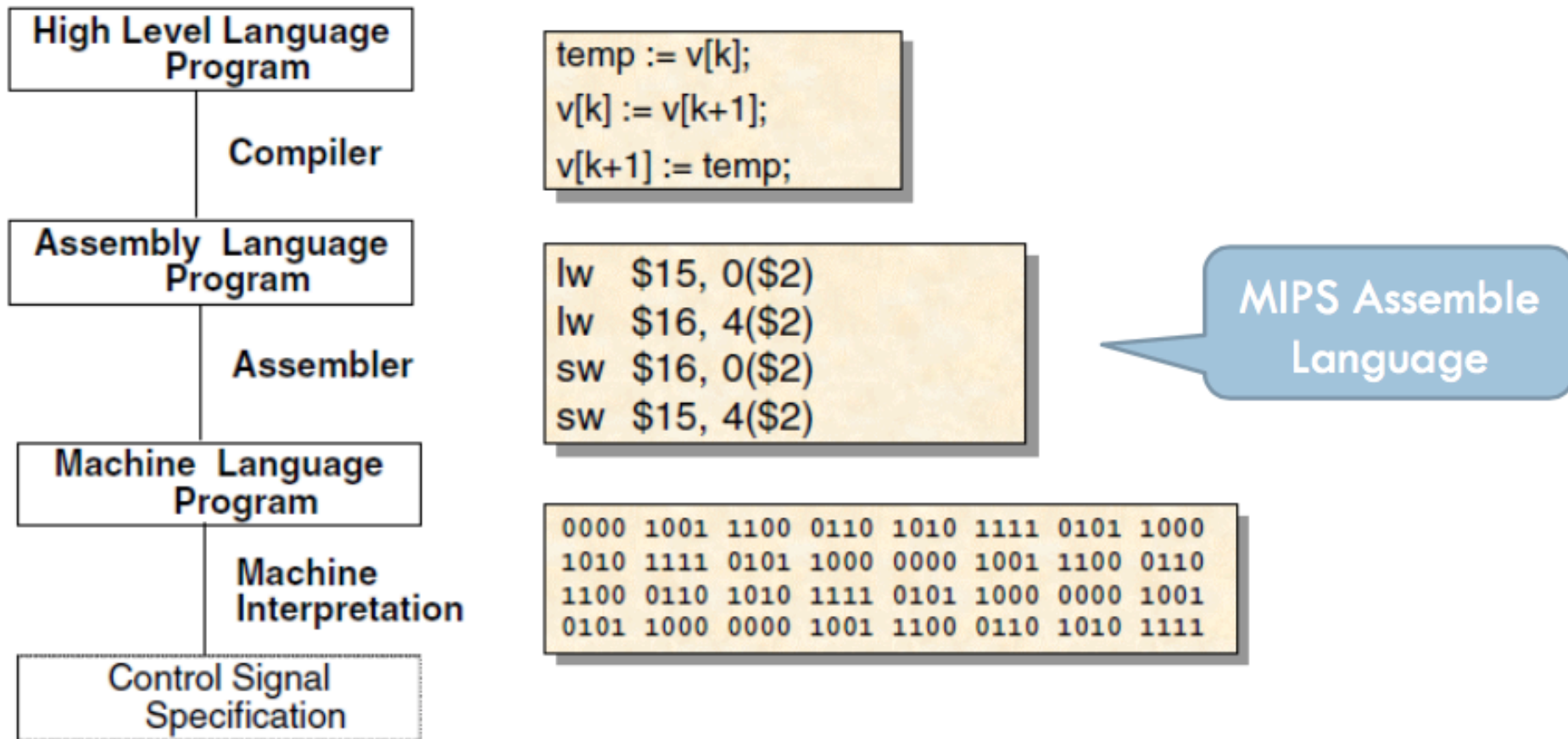
```
lw $15, 0($2)  
lw $16, 4($2)  
sw $16, 0($2)  
sw $15, 4($2)
```

```
0000 1001 1100 0110 1010 1111 0101 1000  
1010 1111 0101 1000 0000 1001 1100 0110  
1100 0110 1010 1111 0101 1000 0000 1001  
0101 1000 0000 1001 1100 0110 1010 1111
```

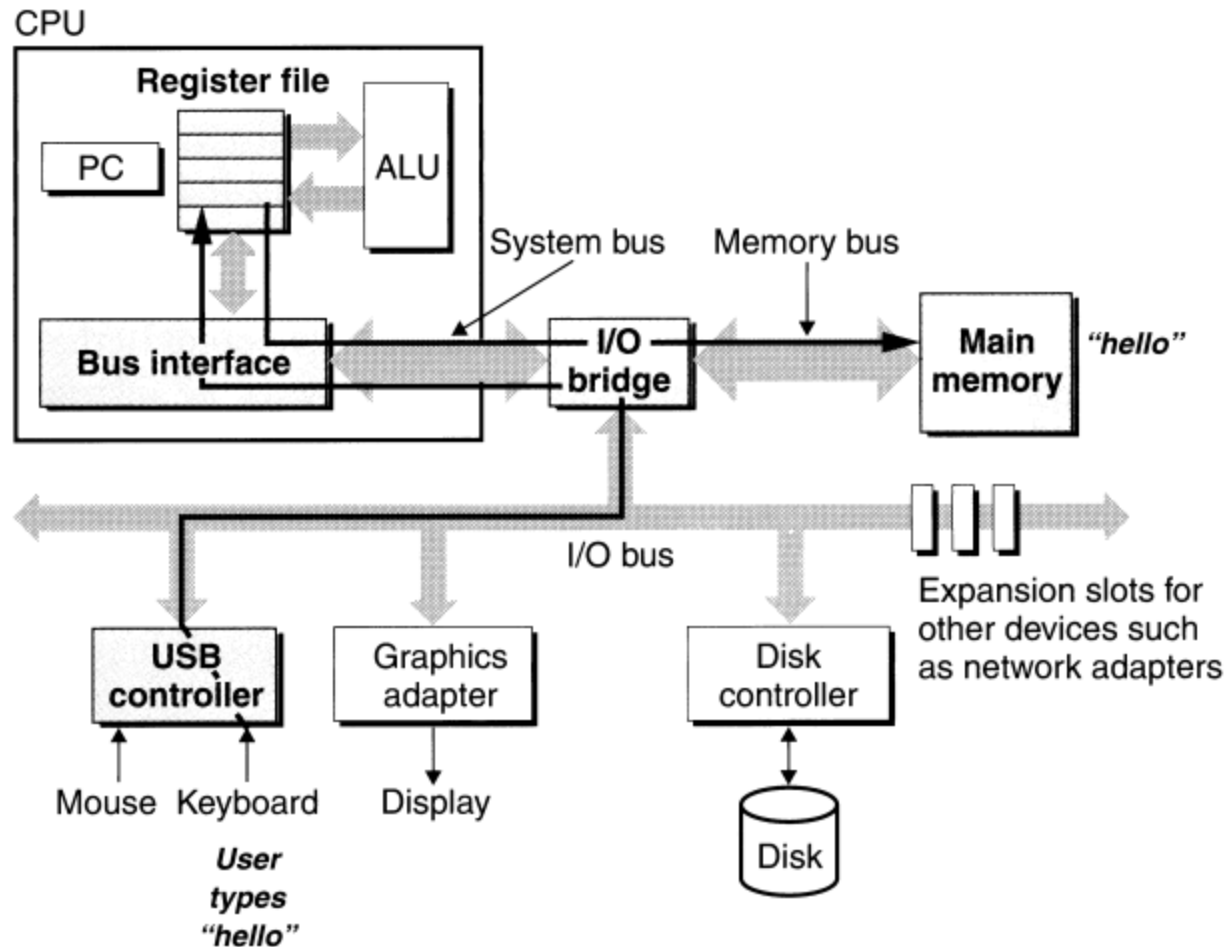
ISA: Hardware – Software Interface



ISA: Hardware – Software Interface

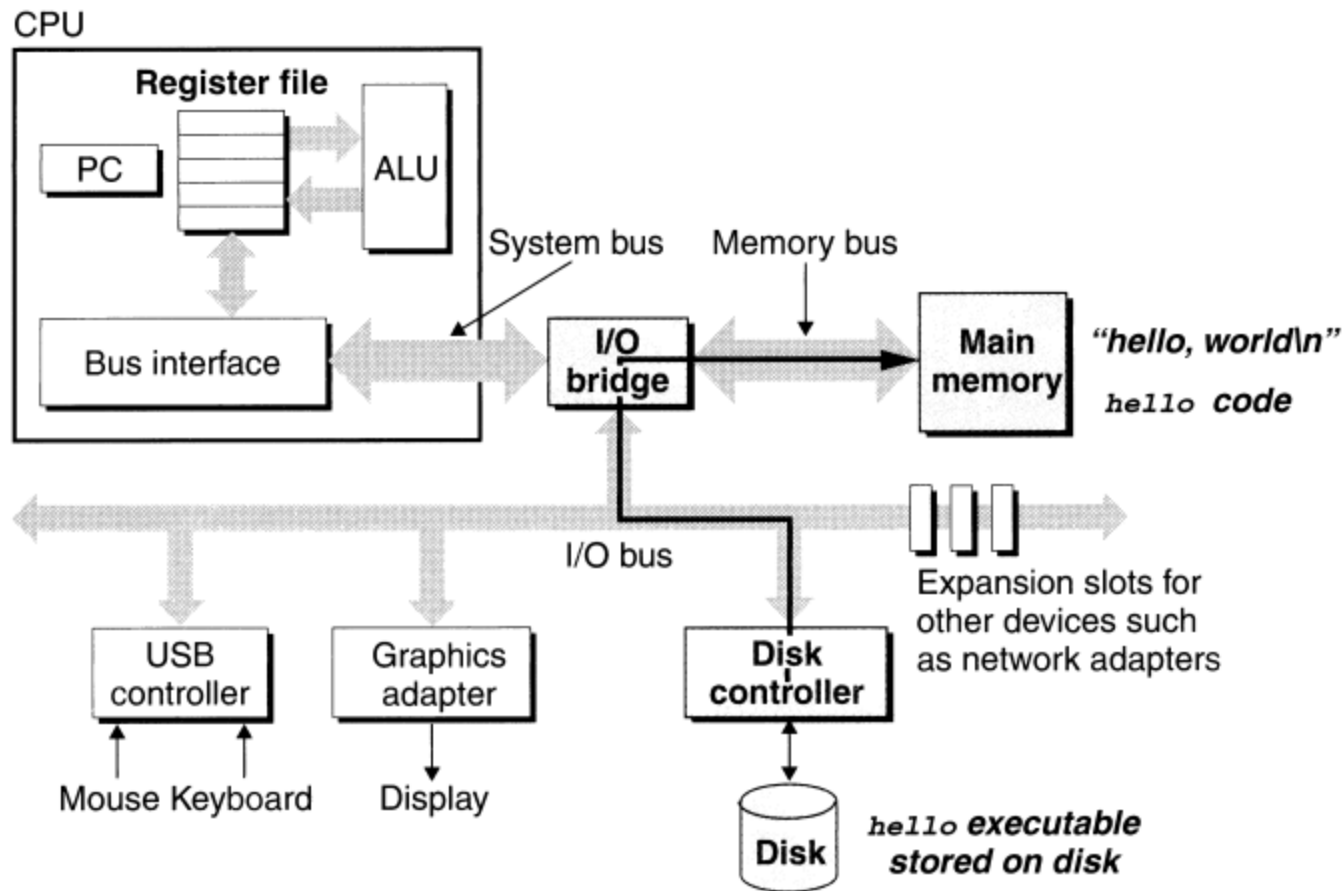


Running the “Hello World” Program

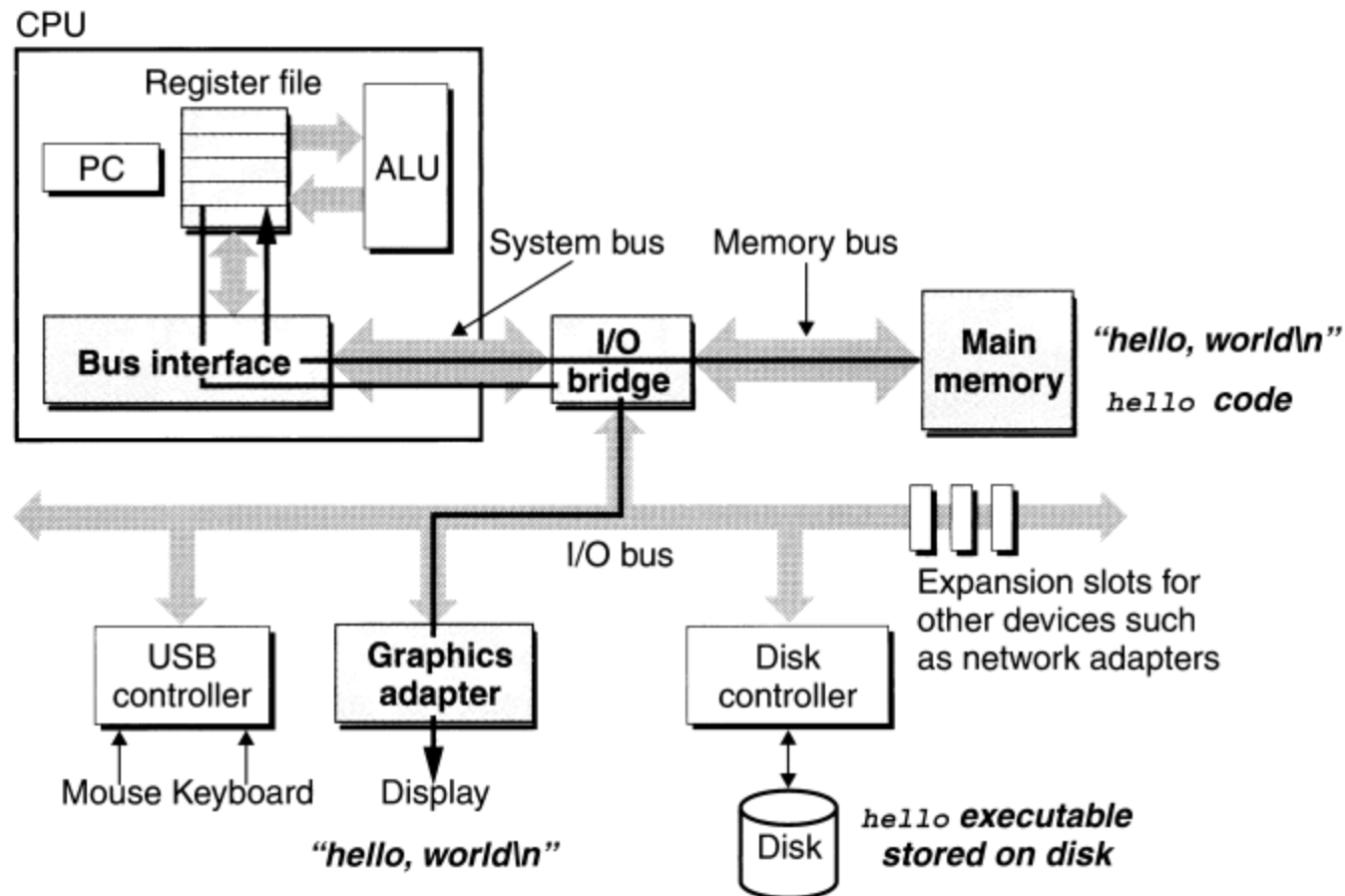


Source: RB&DO-1

Running the “Hello World” Program



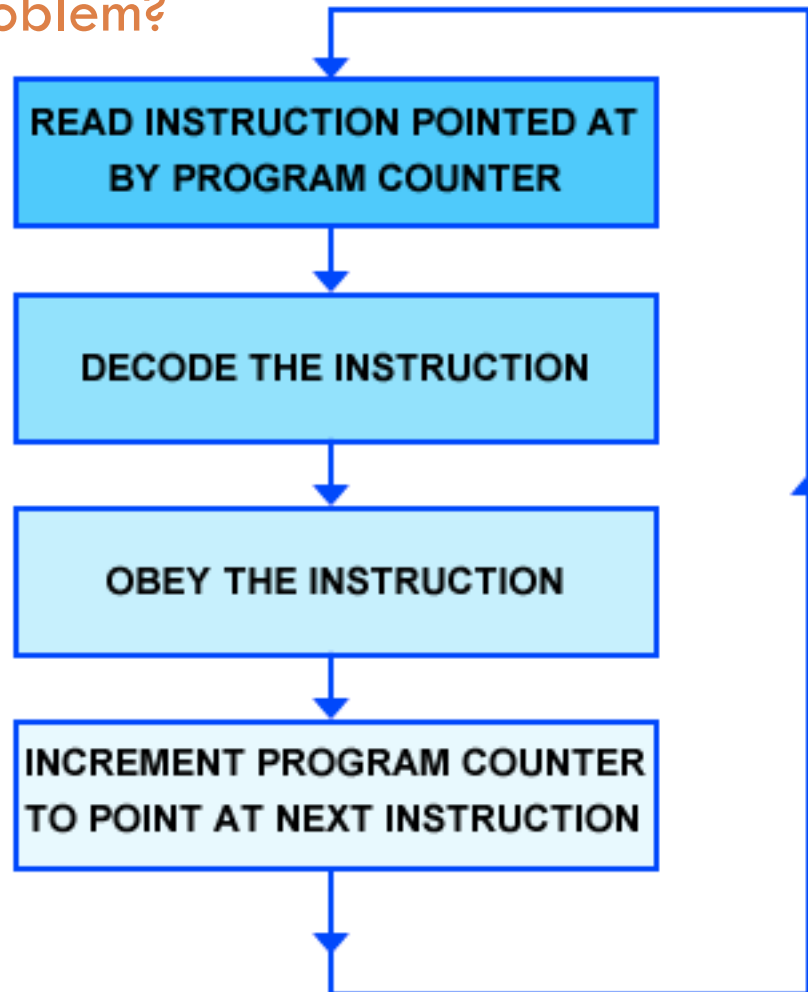
Running the “Hello World” Program



Source: RB&DO-1

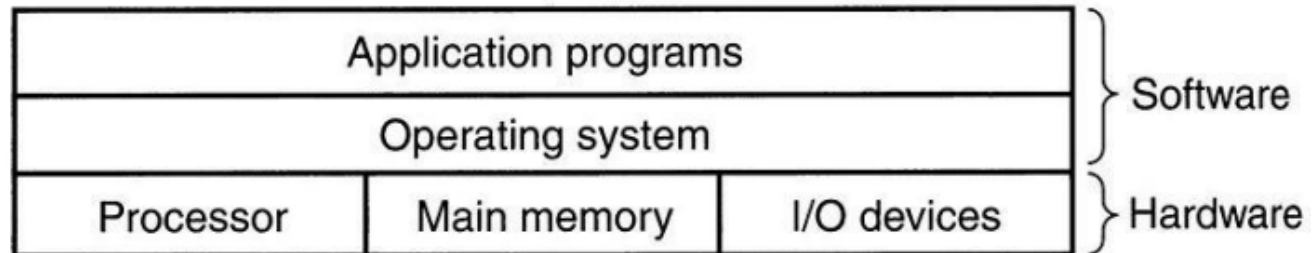
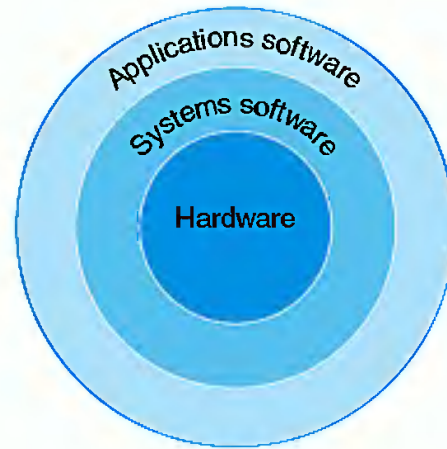
Basic Processor Model

Any Bootstrapping problem?



Computer System = Hardware + System Software + Application Software

Source: H&P-3 (Hennesy & Patterson, 3rd Edition)



System Software: Operating System, Device Drivers, Loaders, Linkers, Compilers, Assemblers, Editors,

Application Software: Web browsers, user-specific applications,