

- Processor technology relates to the architecture of the computation engine used to implement a system's desired functionality.
- The term processor is usually associated with programmable S/w processors.
- There are many other, nonprogrammable, digital systems as being processors.
- Processors differs in its specialization towards a

- The design of a general purpose processor or microprocessor builds a programmable device that is suitable for a variety of applications to maximize the number of devices sold.

- The features of Such processors are

1) Program Memory - The designer of such a processor does not know what program will run on the processor, so the program cannot be built into the digital circuit.

2) Data path - The data path must be general enough to handle a variety of computations, so such a datapath typically has a large register file & one or more general-purpose arithmetic-logic units (ALU's).

For embedded system designer, however, need not be concerned

Advantages

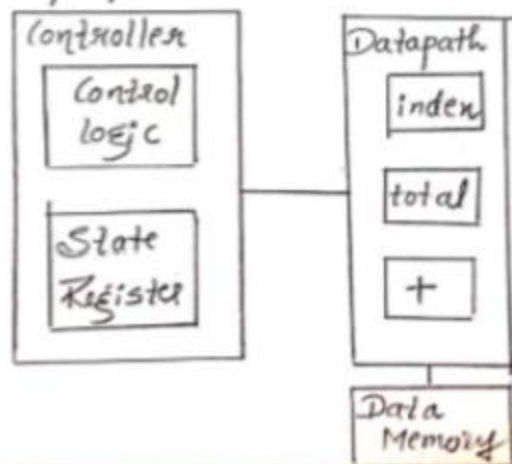
- 1) Time-to-market & NRE cost are low because the designer must only write a program but not do any digital design.
- 2) Flexibility is high because changing functionality requires changing only the program.
- 3) Unit cost may be low in small quantities compared with designing our own processors.
- 4) Performance may be fast for computation intensive applications.

Design metric Drawbacks

- 1) Unit cost may be relatively high for large quantities.
- 2) Performance may be slow for certain applications.
- 3) Size & power may be large due to unnecessary processor. H/w.

Single Purpose Processor

- A Single purpose processor is a digital circuit designed to execute exactly one program. It is also known as coprocessor, accelerator or peripheral.



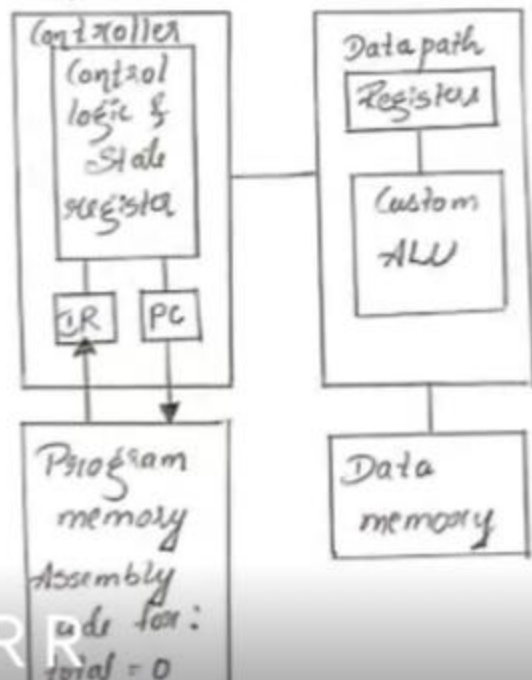
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- The above fig shows the architecture of a Single - purpose processor.

components needed to execute

Such as embedded control, digital signal processing, telecommunications.

- Designer of such a processor can optimize the datapath for the application class, perhaps adding special functional units for common operations & eliminating other infrequently used units



- A logic level library may consist of gates & cells.
- An RT-level library may consist of layouts for RT components like registers, multiplexers, decoders & functional units.
- A behavioural level library may consist of commonly used components such as compression components, bus interfaces, display controllers, & even general-purpose processors.
- Rather than these components being IC's they now must also be available in a form that we can implement on just one portion of an IC.
- Such components are called cores.
- This change from behavioural-level libraries of IC's to libraries of cores has prompted the use of the term intellectual property (IP) to emphasize fact that cores exist in an intellectual form that must be protected from copying.