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EE 460M Lab#3 Question 1 Responses

Design Requirements and Specifications: The first step in design is finding the requirements and specifications.

Design Formulation: Formulating the design at a conceptual level with either a block diagram or at an algorithmic level.

Design Entry: It is the next step in the design flow. The design conceptualized previously is now entered into the cad system. Earlier they used a graphical method called schematic capture but now days HDLS are used to enter the design in textual form.

Simulation: This step is important to confirm if the conceptualized design is functioning correctly. This step helps to find the problems in the early design.

Logic Synthesis: Synthesis means conversion of high level abstract description of the design to actual components at the gate and flip flops level. It is standard practice to use CAD in the industry now. The output of the synthesis tool is called netlist.

Post Synthesis Simulation: The earlier simulation did not take into consideration the specific hardware components that the design is using. This step takes that into account and simulates the design.

Mapping, Placement and Routing: In this step the design is actually mapped onto the specific target technology and placed into specific targets like ASICS or FPGAs. The path taken by the connections to the specific components are decided during the routing process.

ASIC Mask: If an ASIC is being designed, the routed design is used to make a photomask that will be used in the Integrated Circuit Design.

FPGA Programming Unit: In modern day FPGA the programming simply involves writing a sequence of 1’s and 0’s from programming unit into the programmable cells into FPGA using a personal computer.

Configured FPGAs: Programmed FPGA with the specific design configured.