DAILY ASSESSMENT FORMAT

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| **Date:** | **01-06-2020** | **Name:** | **Varun G Shetty** |
| **Course:** | **DIGITAL DESIGN USING HDL** | **USN:** | **4AL17EC093** |
| **Topic:** | **Industry application,**  **Business fundamentals of HDL**  **FPGA vs ASIC.** | **Semester & Section:** | **6th & ‘B’** |
| **GitHub Repository:** | **Varunshetty4** |  |  |

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| **FORENOON SESSION DETAILS** |
| **Image of session**  **1.** |
| **Report – Report can be typed or hand written for up to two pages.**  FPGA Basics – A Look Under the Hood An introductory look inside Field Programmable Gate Arrays. We’ll go over: Strengths & Weaknesses of FPGAs How FPGAs work What’s inside an FPGA So you keep hearing about FPGAs being utilized in more and more.  applications, but aren’t sure whether it makes sense to switch to a new technology. Or maybe you’re |

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| just getting into the embedded world and want to figure out if an FPGA-based system makes sense for you or not. This paper provides an overview of some of the key elements of FPGAs for engineers interested in utilizing FPGA-based technologies.  It’s worth noting that this is a complex topic, and as such, some topics are not covered, some are just introductory, and others will evolve over time. This paper should still give you a lot of helpful information if you’re new to the world of FPGAs.  What are the most important things you should know right away? Get out of the software mindset – You’re not writing software. Let me say that again because this is the single most important point if you’re thinking about working with FPGAs. You-are-NOT-writing- software. You’re designing a digital circuit. You’re using code to tell the chip how to configure itself. Plan for lots of bugs – yes, plan for them.  They are going to happen. Way more than you expected. If you’re a newbie developer, you need to pull in someone that has experience with FPGA development to help with this estimate .Application-specific realities – you ought to concern yourself with realities revolving around cyber security and safety, as FPGAs are a different animal than what you’re likely used to. What is an FPGA?  An FPGA is a (mostly) digital, (re-)configurable ASIC. I say mostly because there are analog and  mixed-signal aspects to modern FPGAs. For example, some have A/D converters and PLLs.  here for some more info.  Floating point arithmetic – historically, the basic arithmetic elements within an FPGA have been fixed-point binary elements at their core. In some cases, floating point math can be achieved (see Xilinx FP Operator and Altera FP White Paper), but it will chew up a lot of logical resources.  Be mindful of single-precision vs double-precision, as well as deviations from standards. However, this FPGA weakness appears to be starting to fade, as hardened floating-point DSP blocks are starting to be embedded within some FPGAs (see Altera Aria 10 Hard Floating Point DSP Block).Very low power – Some FPGAs have low power modes (hibernate and/or suspend) to help reduce current consumption, and some may require external mode control ICs to get the most out of this.  Check out an example low power mode FPGA here. There are both static and dynamic aspects to power consumption |



