
# University of Stellenbosch

# Department Electrical and Electronic Engineering

# Digital Systems 144
# Praktical 7 - 2004

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**Goal**

To further gain confidence with the graphic input and simulation of digital circuits in the Altera MAXPLUS II environment and with the synthesis of multiplexors.

**Assignment**

1. Build a two-to-one (single bit) and a four-to-one (single bit) multiplexor on gate level and package both as new symbols Mux21 and Mux41.

2. Synthesize and simulate the function F(a,b,c) = $\Sigma$m(1,2,4,7) first with Mux21's and then with Mux41's.

3. Synthesize and simulate the function F = F(a,b,c,d) = $\Sigma$m(0,1,3,6,8,9,14,15) by using Shannon's theorem and using Mux21's.

**Execution**

Please work in groups of **two**. Each student must get the opportunity to operate the computer and the software. Each student must document his/her own results and observations in his/her own laboratory book. Print the circuit diagrams and timing diagrams and make sure that one of the assistants sign off your work as proof that you attended the session.

20 September 2004
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