Concordia University Department of Computer Science and Software Engineering

SOEN 331 Section S: Formal Methods

for Software Engineering

Assignment 4

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1 Our assignment

1. Find a logically equivalent formula for $\phi \; W \; \psi$ and provide a short reasoning to support your answer. Represent this equivalence between the two expressions with the appropriate logical connective, and support your reasoning.

   Solution:

   The logically equivalent formula would for this would be:

   $(\phi \; W \; \psi) \equiv (\phi \; \oplus \; \psi)$

   These are equivalent because $\phi \; W \; \psi$ means that until the value for ψ is false, ϕ is gonna return true. This is only acheivable with the **XOR** operation since whenever the value for ψ is 0, value for ϕ is equal to 1. and vice versa.