1. Using the Design Architect tool in Mentor Graphics, implement a digital logic circuit for the following boolean expression:
   \[ S = A \oplus B \oplus C \]
   Generate a symbol for it and turn in a printout of the schematic (logic diagram) and the symbol. (Note that \( \oplus \) is the symbol for an X-OR gate)

2. Using Design Architect, implement a digital logic circuit for the following boolean expression:
   \[ Z = A \cdot B + A \cdot C + B \cdot C \]
   Generate a symbol for it and turn in a printout of the schematic and the symbol.

3. A Full Adder is a digital circuit used for adding 2 binary digits, with a carry in. The outputs of the adder are the sum and the carry out. If the two binary digits to be added are A and B, and the carry in is CIN, the logic expressions for sum and carry out are respectively:
   \[ SUM = A \oplus B \oplus CIN \]
   \[ COUT = A \cdot B + A \cdot CIN + B \cdot CIN \]
   Using your designs in question 1 and question 2, implement a full adder. Turn in a printout of the schematic for a full adder.

NOTE - This assignment has to be turned in on 4 October, 1999