Self-Check for Lecture#16

Solutions

1. Convert the following infix expressions to RPN:
   a. \[(a + b) - (c + d) * e\]
      \[ab+cd+e*-\]
   b. \[a + b * c - d * e / f + h\]
      \[abc*+de*f/-h+\]

2. Convert the following postfix expressions to infix:
   a. \[abc+d++\]
      \[a+((b+c)*d)\]
   b. \[ab+cd/e*f/+g-h*\]
      \[((a+b)+(((c/d)*e)/f)-g)*h\]

3. Let \[a = 5, b = 7, c = 4, d = 2, e = 3, f = 1, g = 6\]. Evaluate the following RPN expressions:
   a. \[ab+c-d*\]  
      \[16\]
   b. \[ab+c+de*f/g-*\]
      \[0\]

4. Implement the statement \[G = (A + B \times C) / (D - E \times F)\] in the IA-32 floating-point unit. It’s not necessary to write a complete program or procedure ... just write an FPU code fragment.
   NOTE: The RPN equivalent is \[ABC^+DE^+/\]

   \[
   \text{finit} \\
   \text{fld} \quad A \\
   \text{fld} \quad B \\
   \text{fld} \quad C \\
   \text{fmul} \\
   \text{fadd} \\
   \text{fld} \quad D \\
   \text{fld} \quad E \\
   \text{fld} \quad F \\
   \text{fmul} \\
   \text{fsub} \\
   \text{fdiv} \\
   \text{fstp} \quad G
   \]