2.a DCW places the 16-bit half-word into memory. This is useful because it allows us to assist and control the assembly process. In this case this is helpful in storing large expressions into memory for us to call and use later, even if a certain execution requires more space to run than is available in the registers.

b. The main program executes at a clock rate of 80Mhz frequency. This means that the program will execute a line every 12.5 ns. If there are 6 asm lines to execute the while loop, the program will toggle PF1 at approximately every 75 ns.

c. This instruction will store the pc or the Program counter into r0 and will increment it by #24. After the second LDR is called, the r0 will store the r0 with an index of #0x08 back into r0.

d.