Write, assemble and run successfully on the simulator a Mac-1 subroutine \texttt{minev}\((n, x)\) that returns in the AC the address of the integer possessing the smallest even value (i.e., the farthest left value on the real line that is a multiple of 2, including zero) among the \(n\) integers in the array whose starting address is \(x\). Your subroutine should be tested with the main program shown below, which defines how the parameters are passed.

\[
\begin{array}{ll}
\text{EXTRN} & \text{minev} \\
\text{ans1} & \text{RES} 1 \\
\text{ans2} & \text{RES} 1 \\
\text{ans3} & \text{RES} 1 \\
n1 & 7 \\
n2 & 10 \\
n3 & 5 \\
\text{start} & \text{loco 4020} \\
\text{swap} & /\text{initialize sp} \\
\text{loco} & n1 \\
\text{push} & /\text{push address n1} \\
\text{loco} & \text{data} \\
\text{push} & /\text{push array start address} \\
\text{one} & \text{call minev} \\
\text{stod} & \text{ans1} \\
\text{insp} & 2 \\
\text{loco} & \text{n2} /\text{push address n2} \\
\text{push} & \text{loco data} \\
\text{addd} & (4) \\
\text{push} & /\text{push array start address} \\
\text{two} & \text{call minev} \\
\text{stod} & \text{ans2} \\
\text{insp} & 2 \\
\text{loco} & \text{n3} /\text{push address n3} \\
\text{push} & \text{loco data} \\
\text{addd} & (6) \\
\text{push} & /\text{push array start address} \\
\text{three} & \text{call minev} \\
\text{stod} & \text{ans3} \\
\text{insp} & 2 \\
\text{halt} & \\
\end{array}
\]

\[
/\text{data array continues here but} \\
/\text{is shown in the above right hand column}
\]

Hand in a copy of the main program symbolic assembly listing, the subroutine symbolic assembly listing, the contents of (macro) memory after “load main sub” (i.e., of main.als) before execution of the program, and the contents of memory after execution of the program. Highlight and comment upon the final answers. Specify what values are contained in the addresses specified by \texttt{ans1}, \texttt{ans2}, and \texttt{ans3}. 

(Due: Class 17, Thurs., Mar. 30, 2006)