Section 1.7: cont'd

computer representation of sets

consider the following sets

$$A = \{1, 3, 5\}$$
$$B = \{1, 4, 7, 10\}$$
$$U = \{1, 2, 3, \ldots 10\}$$

convert everything to bitstrings (1s and 0s)

elements sets	1	2	3	4	5	6	7	8	9	10
A	1	0	1	0	1	0	0	0	0	0
B	1	0	0	1	0	0	1	0	0	1
$\bar{A}$	0	1	0	1	0	1	1	1	1	1
$\bar{B}$	0	1	1	0	1	1	0	1	1	0
$\bar{A} \wedge \bar{B}$	0	1	0	0	0	1	0	1	1	0

so $\overline{A} \wedge \overline{B} = \{2, 6, 8, 9\}$

note: answer must be in <u>set</u> form

example: consider the sets

$$U = \{1, 2, 3, \ldots 8\}$$
$$A = \{2, 4, 5, 6, 7\}$$
$$B = \{1, 2, 3, 7, 8\}$$

use computer representation of sets to find

$$\overline{\bar{A} \wedge B} \cup A$$

	1	2	3	4	5	6	7	8
A	0	1	0	1	1	1	1	0
B	1	1	1	0	0	0	1	1
$\bar{A}$	1	0	1	0	0	0	0	1
$\bar{A} \wedge B$	1	0	1	0	0	0	0	1
$\overline{\bar{A} \wedge B}$	0	1	0	1	1	1	1	0
$\overline{\bar{A} \wedge B} \cup A$	0	1	0	1	1	1	1	0

$$\overline{\bar{A} \wedge B} \cup A = \{2, 4, 5, 6, 7\} \Big\} \text{either}$$
$$= A$$