Chapter 5: Constraint satisfaction problems

[1] In your own words define

i. CSP
ii. Boolean CSP
iii. Types of Constraints
iv. Constraint graph

Apply these terms on Australia map coloring problem if possible.

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[2] Solve the following CSP using Relaxation

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  FORTY
+   TEN
+   TEN
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 SIXTY
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To make the problem easier, suppose that **T=8**.

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[3] Define the following terms:

v. Backtracking Search
vi. Three questions for Improving Backtracking Efficiency
vii. Minimum remaining values(MRV)
viii. Most constraining variable(MCV)
ix. Least constraining value(LCV)
x. Forward checking
xi. Arc consistency
xii. K-consistency
xiii. strongly consistency
xiv. Min-conflict
xv. Performance measure of CSP

[4] Write an algorithm for Tree-structured CSP, with example

[5] Write an algorithm for Cycle Cutset, with example

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[6] For the map of Australia, we are trying to color it with three colors: red , green , and blue

i. Formulate the CSP, and sketch the constraint graph.
ii. Solve the problem using <u>Cycle Cutset</u>

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[7] For the following equation, we are playing crypt-arithmetic

$$\begin{array}{r} T\ W\ O \\ +\ T\ W\ O \\ \hline F\ O\ U\ R \end{array}$$

Formulate the CSP, and sketch the constraint hyper-graph.