

Solution:

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1. The number of possible vertex covers is 2^n , where n is the number of vertices.
 2. We can create an array representing the vertices, where each element in the array is either 1 (included) or 0 (not included). For example, `array[0]` represents vertex 1, `array[1]` represents vertex 2, and so on.
 3. `{2, 3, 5, 7}` can be represented as `[0, 1, 1, 0, 1, 0, 1, 0]`.
 4. The fitness function $F(p)$ is defined as the total number of edges for all vertices minus the number of vertices.
 5. $F(\{2, 3, 5, 7\}) = 11 - 4 = 7$.
 6. $F(\{2, 4, 6, 3, 8\}) = (3 + 3 + 2 + 3 + 3) - 5 = 9$.
 7. It could be a good idea. It could provide some novel candidate solution that may lead a better solution.
 8. a. If the graph is large, that it is might not find a valid solution.
b. If the valid solution cannot be found, it may take a real long time and cause “unstopped” condition.
 9. To avoid this, we can set a limit of 1000 solutions and select the best fitness genotypes found.
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