# alternative characterizations of Noetherian topological spaces

| | |
|---|---|
| Canonical name | AlternativeCharacterizationsOfNoetherianTopologicalSpaces |
| Date of creation | 2013-03-22 14:16:25 |
| Last modified on | 2013-03-22 14:16:25 |
| Owner | yark (2760) |
| Last modified by | yark (2760) |
| Numerical id | 10 |
| Author | yark (2760) |
| Entry type | Theorem |
| Classification | msc 14A10 |

Let $X$ be a topological space. The following conditions are equivalent conditions for $X$ to be a Noetherian topological space:

1. $X$ satisfies the `http://planetmath.org/DescendingChainCondition`descending chain condition for closed subsets.

2. $X$ satisfies the `http://planetmath.org/AscendingChainCondition`ascending chain condition for open subsets.

3. Every nonempty family of closed subsets has a minimal element.

4. Every nonempty family of open subsets has a maximal element.

5. Every subset of $X$ is compact.