

XML Roundtrip

Background

Serialization to XML is a common way to store and transmit structured data. In this task, you must serialize a given Python dictionary into XML format and then deserialize it back. Ensure that the structure and data remain intact.

Task

You are given a dictionary representing a user profile. Your task is to:

- Convert the dictionary into an XML string.
- Convert the XML string back into a dictionary.
- Compare both the XML string and the reconstructed dictionary to verify correctness.
- Print two specific output lines based on whether the serialized and deserialized data match expectations.

Input

There is no input. The dictionary is fixed as:

```
{
    "name": "Alice",
    "age": 30,
    "is_admin": True,
    "skills": ["Python", "Network Programming", "Digital Forensics"]
}
```

Example output

The dictionaries match. {'name': 'Alice', 'age': 30, 'is_admin': True, 'skills': ['Python', 'Network Programming', 'Digital Forensics']} {'name': 'Alice', 'age': 30, 'is_admin': True, 'skills': ['Python', 'Network Programming', 'Digital Forensics']}

The XML strings match. <root><name>Alice</name><age>30</age><is_admin>True</is_admin><skills><item>Python</item><item>Network Programming</item><item>Digital Forensics</item></skills></root> <root><name>Alice</name><age>30</age><is_admin>True</is_admin><skills><item>Python</item><item>Network Programming</item><item>Digital Forensics</item></skills></root>

Constraints

- Use `xml.etree.ElementTree` for XML operations.
- The dictionary may contain:
 - Strings, integers, booleans
 - Lists of strings (under skills)
 - Keys in the dictionary are unique and of string type.
- Values in XML must be cast back to original types (int, bool, str) when deserialized.

Implementation guide

Implement the following functions:

```
def dict_to_xml(data):  
    # Serialize dictionary into XML string  
    pass  
  
def xml_to_dict(xml_str):  
    # Deserialize XML string back to dictionary  
    pass
```

Then write a main block that:

- Serializes test_data to XML.
- Deserializes it back.
- Prints the two required output lines.