```
In [1]: from pathlib import Path
        import json
        import os
        from tinydb import TinyDB
        current dir = Path(os.getcwd()).absolute()
        results dir = current dir.joinpath('results')
        kv data dir = results dir.joinpath('kvdb')
        kv data dir.mkdir(parents=True, exist ok=True)
       def load json(json path):
           with open(json path) as f:
               return json.load(f)
In [2]: class DocumentDB(object):
           def init (self, db path):
               people json = kv data dir.joinpath('people.json')
               visited json = kv data dir.joinpath('visited.json')
               sites json = kv data dir.joinpath('sites.json')
               measurements json = kv data dir.joinpath('measurements.json')
               self. db path = Path(db path)
               self. db = None
               self. person lookup = load json(people json)
               self._visit_lookup = _load_json(visited_json)
               self. site lookup = load json(sites json)
               self. measurements lookup = load json(measurements json)
               self. load db()
            def get site(self, site id):
               return self. site lookup[str(site id)]
            def get measurements(self, person id):
               measurements = []
               for values in self. measurements lookup.values():
                   measurements.extend([value for value in values if str(values[0]['person id']) == str(person id)])
               return measurements
            def get visit(self, visit id):
               visit = self. visit lookup.get(str(visit id))
               visit = [value for key, value in self. visit lookup.items() if key.find(str(visit id), 0, len(key)) > -
               print (self. get site(visit[0]['site id']))
               site = self. get site(visit[0]['site id'])
               visit = site
               print(visit)
               return visit
            def load db(self):
               self. db = TinyDB(self. db path)
               persons = self. person lookup.items()
                for person id, record in persons:
                   print(person id, record)
                   measurements = self. get measurements(person id)
                   print (measurements) #[{'visit id': 619, 'person id': 'dyer', 'quantity': 'rad', 'reading': 9.82}]
                    visit ids = set([measurement['visit id'] for measurement in measurements if "visit id" in measurement
                   print (visit ids)
                    visits = []
                    for visit id in visit ids:
                        visit = self. get visit(visit id)
                        visit['measurements'] = [measurement for measurement in measurements if visit id == measurement
                        visits.append(visit)
                    visits = visits[0] if len(visits) > 0 else {}
                    record['visits'] = visits
                    self. db.insert(record)
In [3]: db_path = results_dir.joinpath('patient-info.json')
        if db path.exists():
           os.remove(db path)
       db = DocumentDB(db path)
       danforth {'person id': 'danforth', 'personal name': 'Frank', 'family name': 'Danforth'}
       []
       set()
       dyer {'person id': 'dyer', 'personal name': 'William', 'family name': 'Dyer'}
       [{'visit id': 619, 'person id': 'dyer', 'quantity': 'rad', 'reading': 9.82}, {'visit id': 619, 'person id': 'dy
       er', 'quantity': 'sal', 'reading': 0.13}, {'visit id': 622, 'person id': 'dyer', 'quantity': 'rad', 'reading':
       7.8}, {'visit id': 622, 'person id': 'dyer', 'quantity': 'sal', 'reading': 0.09}]
       {'site id': 'DR-1', 'latitude': -49.85, 'longitude': -128.57}
       {'site id': 'DR-1', 'latitude': -49.85, 'longitude': -128.57}
       {'site id': 'DR-1', 'latitude': -49.85, 'longitude': -128.57, 'measurements': [{'visit id': 619, 'person id':
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       q': 0.13}]}
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       'dyer', 'quantity': 'rad', 'reading': 9.82}, {'visit id': 619, 'person id': 'dyer', 'quantity': 'sal', 'readin
       g': 0.13}]}
       lake {'person id': 'lake', 'personal name': 'Anderson', 'family name': 'Lake'}
       [{'visit id': 734, 'person id': 'lake', 'quantity': 'sal', 'reading': 0.05}, {'visit id': 752, 'person id': 'la
       ke', 'quantity': 'rad', 'reading': 2.19}, {'visit id': 752, 'person id': 'lake', 'quantity': 'sal', 'reading':
       0.09}, {'visit id': 752, 'person id': 'lake', 'quantity': 'temp', 'reading': -16.0}, {'visit id': 837, 'person
       id': 'lake', 'quantity': 'rad', 'reading': 1.46}, {'visit id': 837, 'person id': 'lake', 'quantity': 'sal', 're
       ading': 0.21}]
       {752, 837, 734}
       {'site id': 'DR-3', 'latitude': -47.15, 'longitude': -126.72}
       {'site id': 'DR-3', 'latitude': -47.15, 'longitude': -126.72}
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       {'site id': 'MSK-4', 'latitude': -48.87, 'longitude': -123.4}
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       'lake', 'quantity': 'rad', 'reading': 2.19}, {'visit id': 752, 'person id': 'lake', 'quantity': 'sal', 'readin
       g': 0.09}, {'visit id': 752, 'person id': 'lake', 'quantity': 'temp', 'reading': -16.0}]}
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       'lake', 'quantity': 'rad', 'reading': 2.19}, {'visit id': 752, 'person id': 'lake', 'quantity': 'sal', 'readin
       g': 0.09}, {'visit_id': 752, 'person_id': 'lake', 'quantity': 'temp', 'reading': -16.0}]}
       pb {'person_id': 'pb', 'personal_name': 'Frank', 'family_name': 'Pabodie'}
       [{'visit id': 734, 'person id': 'pb', 'quantity': 'rad', 'reading': 8.41}, {'visit id': 734, 'person id': 'pb',
       'quantity': 'temp', 'reading': -21.5}, {'visit id': 735, 'person id': 'pb', 'quantity': 'rad', 'reading': 7.2
       2}, {'visit id': 735, 'person id': 'pb', 'quantity': 'sal', 'reading': 0.06}, {'visit id': 735, 'person id': 'p
       b', 'quantity': 'temp', 'reading': -26.0}, {'visit id': 751, 'person id': 'pb', 'quantity': 'rad', 'reading':
       4.35}, {'visit id': 751, 'person id': 'pb', 'quantity': 'temp', 'reading': -18.5}]
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       'lake', 'quantity': 'sal', 'reading': 0.05}]}
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       'lake', 'quantity': 'sal', 'reading': 0.05}]}
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       'pb', 'quantity': 'rad', 'reading': 4.35}, {'visit id': 751, 'person id': 'pb', 'quantity': 'temp', 'reading':
       -18.5}}
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       'pb', 'quantity': 'rad', 'reading': 4.35}, {'visit id': 751, 'person id': 'pb', 'quantity': 'temp', 'reading':
       -18.5}]}
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       'pb', 'quantity': 'rad', 'reading': 8.41}, {'visit id': 734, 'person id': 'pb', 'quantity': 'temp', 'reading':
       -21.5}]}
       roe {'person id': 'roe', 'personal name': 'Valentina', 'family name': 'Roerich'}
       [{'visit id': 752, 'person id': 'roe', 'quantity': 'sal', 'reading': 41.6}, {'visit id': 837, 'person id': 'ro
       e', 'quantity': 'sal', 'reading': 22.5}, {'visit id': 844, 'person id': 'roe', 'quantity': 'rad', 'reading': 1
       1.25}]
       {752, 844, 837}
       {'site id': 'DR-3', 'latitude': -47.15, 'longitude': -126.72, 'measurements': [{'visit id': 735, 'person id':
       'pb', 'quantity': 'rad', 'reading': 7.22}, {'visit id': 735, 'person id': 'pb', 'quantity': 'sal', 'reading':
       0.06}, {'visit id': 735, 'person id': 'pb', 'quantity': 'temp', 'reading': -26.0}]}
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       'pb', 'quantity': 'rad', 'reading': 7.22}, {'visit id': 735, 'person id': 'pb', 'quantity': 'sal', 'reading':
       0.06}, {'visit id': 735, 'person id': 'pb', 'quantity': 'temp', 'reading': -26.0}]}
       {'site id': 'DR-1', 'latitude': -49.85, 'longitude': -128.57, 'measurements': [{'visit id': 622, 'person id':
       'dyer', 'quantity': 'rad', 'reading': 7.8}, {'visit id': 622, 'person id': 'dyer', 'quantity': 'sal', 'readin
       g': 0.09}]}
       {'site id': 'DR-1', 'latitude': -49.85, 'longitude': -128.57, 'measurements': [{'visit id': 622, 'person id':
       'dyer', 'quantity': 'rad', 'reading': 7.8}, {'visit id': 622, 'person id': 'dyer', 'quantity': 'sal', 'readin
       {'site id': 'MSK-4', 'latitude': -48.87, 'longitude': -123.4, 'measurements': [{'visit id': 837, 'person id':
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       q': 0.21}]}
       {'site id': 'MSK-4', 'latitude': -48.87, 'longitude': -123.4, 'measurements': [{'visit id': 837, 'person id':
       'lake', 'quantity': 'rad', 'reading': 1.46}, {'visit id': 837, 'person id': 'lake', 'quantity': 'sal', 'readin
       g': 0.21}]}
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