Project report on

Travel Guide In Thailand

Submitted By

1. Pawaris   Wongsalung   6110545562
2. Vichyawat   Nakarugsa   6110545635
3. Tiranan   Emson   6110546003
4. Sidtipat   Kietchai   6110546046
5. Sukrita   Kittipiyakorn   6110546062
6. Kasidis   Luangwutiwong   6110546364

Present to

Asst. Prof. Hutchatai Chanlekha

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Description of our ontology

Our ontology was designed to serve various useful information to the travelers and the user by offering them information about traveling stuff such as ETA time from one place to another. The user can also check the popularity of each individual landmark of the location as well as checking the top 3 restaurants or hotels at that particular place. Checking whether the current season is suitable for traveling to that area or not is also another functionality of our ontology.

Competency Question

1. Which region is this province?
2. What souvenirs can be found in a specific place in this subdistrict?
3. What is the popularity of the landmarks in the province?
4. How much time from Bangkok to the specific province by private car?
5. How much time from Bangkok to the specific province by plane? (only the province that has an airport)
6. Which province is this landmark located in?
7. What are the accommodations that have ratings more than 4.5 in this province?
8. What are the restaurants that have ratings more than 4.5 in this province?
9. What plans are suitable for each occasion?
    a. Depending on the place
    b. Depending on the activities
    c. Depending on the time
10. Where should I go if I would like to do activities such as hiking, diving, shopping?

Class and class description

Class	Class description
1. Activities	The situation in which a lot of things are happening or people are moving around, in our case we meant kind of activities in travelling.
2. Month	An individual month which can be classified into each Season.
3. Place	A place, classified into kind of places.
3.1 Accommodation	Such as hotels and spas.
3.2 Landmark	Popular place in that specific Province
3.2.1 ArtificialLandmark	Landmark that is artificially built by humans
3.2.2 NaturalLandmark	Landmark that is naturally built by nature
3.3 Province	A principal administrative division of certain countries or empires.
3.4 Region	An area or division, especially part of a country or the world having definable characteristics but not always fixed boundaries.
3.5 Restaurant	It is a business that prepares and serves food and drinks to customers.
3.6 SubDistrict	An administrative division that is a subdivision of a district.
4. Season	Each of the three divisions of the year (rainy, summer, and winter) are marked by particular weather patterns and daylight hours, resulting from the earth's changing position with regard to the sun.
5. Souvenir	A gift from a certain tourist attraction.

6. SuggestedLandmark	Plan for travelling on assumed occasions.
6.1 PlaceForWalking	A suggested landmark for walking.
6.2 PlaceForDiving	A suggested landmark for diving.
6.3 PlaceForPhotographing	A suggested landmark for photographing.
6.4 PlaceForPhotographingAndWalking	A suggested landmark for photographing and walking.
6.5 PlaceForSwimmingAndCruising	A suggested landmark for swimming and cruising.
6.6 PlaceToGoAtNorthern	A suggested landmark to go traveling in Northern Thailand.
6.7 PlaceToGoInApril	A suggested landmark to go traveling in April.
6.8 PlaceToGoInDecember	A suggested landmark to go traveling in December.
6.9 PlaceToGoInSeptember	A suggested landmark to go traveling in September.
6.10 CampingInDecember	A suggested landmark to go camping in December.
6.11 PhotographingInOctober	A suggested landmark to go photographing in October.
6.12 SwimmingInApril	A suggested landmark to go swimming in April.

Object Property

Property	Property description	Domain	Range
1. hasActivities	description: place(x) has the activity(y)	Landmark	Activities
2. hasMonth	InverseOf: isMonthOf	Season	Month

	description: description: season(x) has the month(y)		
3. hasOptimalSeason	description: place(x) has optimal season(y)	Landmark	Season
4. hasPlace	InverseOf: isLocatedIn description: place(x) has another place(y) inside	Place	Place
4.1 hasLandmark	InverseOf: isLandmarkOf description: province(x) has another landmark(y) inside	Province	Landmark
4.2 hasProvince	InverseOf: isProvinceOf description: province(x) has another region(y) inside	Region	Province
4.3 hasRestaurant	InverseOf: isRestaurantOf description: province(x) has restaurant(y)	Province	Restaurant
5. hasSouvenir	InverseOf: isSouvenirOf description: place(x) has souvenir(y)	Subdistrict	Souvenir
6. isLocatedIn	InverseOf: hasPlace description: place(x) has another place(y) inside	Place	Place
6.1 isLandmarkOf	InverseOf: hasLandmark description: landmark(x) is located in province(y)	Landmark	Province
6.2 isProvinceOf	InverseOf: hasProvince description: province(x) is a province of region(y)	Province	Region
6.3 isRestaurantOf	InverseOf: hasRestaurant description: restaurant(x) is a restaurant of province(y)	Restaurant	Province
7. isMonthOf	InverseOf: hasMonth description: month(x) is month of season(y)	Month	Season

8. isSouvenirOf	InverseOf: hasSouvenir description: souvenir(x) belongs/came from place(x)	Souvenir	Subdistrict

Data Property

Property	Property description	Domain	Range
createdByNataural	Boolean property that returns true if the landmark was naturally created and false if it was artificially created by humans.	Landmark	xsd:boolean
hasAirport	Boolean property that returns true if the selected Province contains Airport, false if it isn't.	Province	xsd:boolean
hasPopularity	Returns the popularity rating (1-5) of that place.	Landmark, Restaurant, Accommodation	xsd:float
hasPrice	Return the price of each individual souvenir in Thai Baht.	Souvenir	xsd:float
noOfMonth	Return the number of months.	Month	xsd:integer
takeTimeByCar	Return the average minutes taken to travel to that specific province by car.	Province	xsd:integer
takeTimeByPlane	Return the average minutes taken to travel to that specific place by plane.	Province	xsd:integer

Rules or SPARQL query for answering the competency questions

1. Which region is this province?

```
SELECT ?Region ?Province
WHERE {?Region tra:hasProvince ?Province.}
ORDER BY (?Region)
```

Region	Province
Central	Nakhon_Pathom
Central	Bangkok
Central	Nonthaburi
Eastern	Chonburi
Eastern	Rayong
Eastern	Trat

2. What souvenirs can be found in a specific place in this subdistrict?

```
SELECT ?souvenir ?sub ?province
WHERE {?souvenir tra:isSouvenirOf ?sub.
         ?province tra:hasSubDistrict ?sub.}
```

```
SELECT ?s
WHERE {?s tra:isSouveniorOf tra:Don_Mueang}
```

souvenir	sub	province
Crab_Fried_Rice_from_Jalil	Ban_Puek	Chonburi
Soft_Stem_Oolong_Tea	Mae_Khao_Tom	Chiang_Rai
Fried_Shrimp_Paste	Ko_Kaeo	Phuket
Nonthaburi_Bakery	Talat_Khwan	Nonthaburi
Sai_Lunta_Dessert	Sai_Thai	Krabi
Suan_Dusit_Toffee_Cake	Phra_Nakhon	Bangkok
Squid_Dad_Deaw	Na_Pa	Chonburi
Dan_Kwean_Pottery	Khok_Sung	Nakhon_Ratchasima
Kanom_Chan_Phun_Suk	Rai_Som	Phetchaburi
Phumriang_Silk	Wat_Pradu	Surat_Thani
Kao_Lao_Mueng_Non	Bang_Krang	Nonthaburi

3. What is the popularity of the landmarks in the province?

```
SELECT  ?Province ?Landmark ((?popular) as ?Rating)
WHERE {
        ?Province rdf:type tra:Province;
   tra:hasLandmark ?Landmark.

   ?Landmark rdf:type tra:Landmark;
   tra:hasPopularity ?popular.
   }
GROUP BY ?Landmark ?Province ?popular
ORDER BY (?Province)
```

Province	Landmark	Rating
Bangkok	Siam_Paragon	"4.5"^^<http://www.w3.org/2001/XMLSchema#float>
Bangkok	The_Grand_Palace	"4.5"^^<http://www.w3.org/2001/XMLSchema#float>
Bangkok	Wat_Phra_Kaew	"4.6"^^<http://www.w3.org/2001/XMLSchema#float>
Chiang_Mai	Tha_Phae_Gate	"4.2"^^<http://www.w3.org/2001/XMLSchema#float>
Chiang_Mai	Doi_Inthanon_National_Park	"4.6"^^<http://www.w3.org/2001/XMLSchema#float>
Chiang_Mai	Wat_Phra_That_Doi_Suthep	"4.6"^^<http://www.w3.org/2001/XMLSchema#float>

4. How much time from Bangkok to the specific province by private car?

```
SELECT ?time
WHERE { tra:Nonthaburi tra:takeTimeByCar ?time }
```

time
"30"^^<http://www.w3.org/2001/XMLSchema#integer>

5. How much time from Bangkok to the specific province by plane? (only the province that has an airport)

```
SELECT  ?Province
WHERE {
      ?Province tra:hasAirport ?bool;
      FILTER (?bool = "true"^^xsd:boolean)
 }
ORDER BY (?province)
```

```
SELECT ?time
WHERE { tra:Krabi tra:takeTimeByPlane ?time }
```

Province
Rayong
Chiang_Rai
Tak
Phuket
Trat
Chiang_Mai
Krabi
Khon_Kaen
Bangkok
Buri_Ram
Surat_Thani
Phrae

time
"75"^^<http://www.w3.org/2001/XMLSchema#integer>

6. Which province is this landmark located in?

```
SELECT ?province ?landmark
WHERE { ?province tra:hasLandmark ?landmark. }
ORDER BY (?province)
```

province	landmark
Bangkok	Siam_Paragon
Bangkok	The_Grand_Palace
Bangkok	Wat_Phra_Kaew
Chiang_Mai	Tha_Phae_Gate
Chiang_Mai	Doi_Inthanon_National_Park
Chiang_Mai	Wat_Phra_That_Doi_Suthep

7. What are the accommodations that have ratings more than 4.5 in this province?

```
SELECT ?acc
WHERE { ?acc rdf:type tra:Accommodation;
               tra:hasPopularity ?pop;
               tra:isAccommodationOf tra:Chiang_Mai.
FILTER(?pop>4.5)
}
```

acc

Very_Peaceful_Eden_Gate_Villa_Central_Chiang_Mai

U_Nimman_Chiang_Mai

8. What are the restaurants that have ratings more than 4.5 in this province?

```
SELECT ?Restaurant
WHERE { ?Restaurant rdf:type tra:Restaurant;
                    tra:hasPopularity ?pop;
                    tra:isRestaurantOf tra:Nonthaburi.
FILTER(?pop>4.5)
}
```

Restaurant

24_Steakhouse_and_Bar

Eleven_Cafe

9. What plans are suitable for each occasion?

    a. Depending on the place

    b. Depending on the activities

    c. Depending on the time

```
By Rules:
tra:isProvinceOf(?pro, tra:Northern) ^ tra:isLandmarkOf(?p, ?pro) ->
tra:PlaceToGoAtNorthern(?p)

tra:isMonthOf(tra:October, ?s) ^ tra:hasActivities(?p, tra:Photographing) ^
tra:hasOptimalSeason(?p, ?s) -> tra:PhotographingInOctober(?p)

tra:isMonthOf(tra:December, ?s) ^ tra:hasOptimalSeason(?p, ?s) ->
tra:PlaceToGoInDecember(?p)
```

10. Where should I go if I would like to do activities such as hiking, diving, shopping?

```
By Rules: tra:hasActivities(?p, tra:Cruising) ^ tra:hasActivities(?p, tra:Swimming) ->
tra:PlaceForSwimmingAndCruising(?p)
```

Duties of Members

1. Pawaris Wongsalung 6110545562
   Duty: Gathering instances of each class and add them to ontology,
   write/create rules into the ontology and also help writing
   annotation/description of each individual document's topics.

2. Vichyawat Nakarugsa 6110545635
   Duty: Find instances and add them to the ontology, plan and implement instance
   and relationship write rules for competency questions and compose document
   reports.

3. Tiranan Emson 6110546003
   Duty: Add classes ontology, finding instances for the ontology, creating rules for
   answering the competency questions and creating season rules and add object
   properties into the ontology and writing annotation/description of each individual
   document's topics.

4. Sidtipat Kietchai 6110546046
   Duty: Add classes and relationships instances implementing relation/object
   properties to Protege write/create landmark rules into the ontology write document
   report, mostly handling landmark designing and adding instances.

5. Sukrita Kittipiyakorn 6110546062
   Duty: Create competency questions, find instances and add them to the ontology,
   add rules to answer the competency questions and also help writing descriptions of
   each individual.

6. Kasidis Luangwutiwong 6110546364
   Duty: Create classes ontology, finding instances for the ontology, create rules, and query for answering the competency questions, and also help writing the report rules and SPARQL query.

Reference

- https://www.agoda.com/th-th/ (for rate of accommodation)
- https://www.google.co.th/maps (for time's navigation)
- https://en.m.wikipedia.org/wiki/Tourist_attraction#:~:text=Cultural%20tourist%20attractions%20can%20include,living%20history%20museums%2C%20public%20art%20 (Types of tourist attractions)
- https://www.tripadvisor.com/Attractions-g293916-Activities-Bangkok.html
- https://www.planetware.com/tourist-attractions-/bangkok-tha-bk-b.htm