1. predict_water_source/1

Purpose: Main rule to initiate the prediction of the water source based on user inputs.

Description:

- Prompts the user for the lake_distance.
- Calls decide_lake/2 to determine the water source based on the provided lake distance.

Usage:

```
?- predict_water_source(WaterSource).
```

Parameters:

- WaterSource: The predicted type of water source (e.g., 'lake', 'river', 'rain', 'ground_water').

---

2. decide_lake/2

Purpose: Decides the water source based on the distance to the lake.

Description:

- If lake_distance is less than 10 km, the water source is 'lake'.
- If lake_distance is 10 km or more, it prompts for river_distance and calls decide_river/3.

Usage:

```
decide_lake(LakeDistance, WaterSource).
```

Parameters:

- LakeDistance: Distance to the lake.
- WaterSource: The resulting water source ('lake', 'river', 'rain', 'ground_water').

---

3. decide_river/3

Purpose: Decides the water source based on the distance to the river and potentially other factors.

Description:

- If river_distance is 8 km or more, it prompts for rainfall_intensity and calls decide_rain/4.
- If river_distance is less than 8 km, it evaluates rainfall_intensity to determine if the water source is 'rain' or 'river'.

Usage:

```
decide_river(RiverDistance, WaterSource, LakeDistance).
```

Parameters:

- RiverDistance: Distance to the river.
- WaterSource: The resulting water source ('rain', 'river', 'lake', 'ground_water').
- LakeDistance: Distance to the lake (used for contextual decision-making).

---

4. decide_rain/4

Purpose: Decides the water source based on rainfall intensity and other factors.

Description:

- If rainfall_intensity is 150 mm or more, the water source is 'rain'.
- If rainfall_intensity is less than 150 mm, it prompts for sandy_aquifer and calls decide_sandy_aquifer/4.

Usage:

```
decide_rain(RiverDistance, RainfallIntensity, WaterSource, LakeDistance).
```

Parameters:

- RiverDistance: Distance to the river (needed for contextual decisions).
- RainfallIntensity: Intensity of the rainfall.
- WaterSource: The resulting water source ('rain', 'river', 'lake', 'ground_water').
- LakeDistance: Distance to the lake (used for contextual decision-making).

---

5. decide_sandy_aquifer/4

Purpose: Determines the water source based on the presence of a sandy aquifer.

Description:

- If sandy_aquifer is 'yes', it prompts for beach_distance and calls decide_beach/3.
- If sandy_aquifer is 'no', it checks if lake_distance is less than 14 km to decide between 'lake' or 'rain'.

Usage:

```
decide_sandy_aquifer(SandyAquifer, WaterSource, LakeDistance, RiverDistance).
```

Parameters:

- SandyAquifer: Presence of a sandy aquifer ('yes' or 'no').
- WaterSource: The resulting water source ('rain', 'river', 'lake', 'ground_water').
- LakeDistance: Distance to the lake.

- RiverDistance: Distance to the river.

---

6. decide_beach/3

Purpose: Decides the water source based on beach distance and river distance.

Description:

- If beach_distance is less than 5 km and river_distance is less than 20 km, the water source is 'river'.
- If beach_distance is less than 5 km and river_distance is 20 km or more, the water source is 'rain'.
- If beach_distance is 5 km or more, the water source is 'ground_water'.

Usage:

```
decide_beach(BeachDistance, RiverDistance, WaterSource).
```

Parameters:

- BeachDistance: Distance to the beach.
- RiverDistance: Distance to the river (needed for decision-making).
- WaterSource: The resulting water source ('river', 'rain', 'ground_water').

---

7. prompt/2

Purpose: Prompts the user to enter a value for a given attribute.

Description:

- Displays a message asking for the value of the specified attribute.
- Reads the user's input and assigns it to the provided variable.

Usage:

```
prompt(Attribute, Value).
```

Parameters:

- Attribute: The name of the attribute to prompt the user for.
- Value: The variable to store the user’s input.