



มหาวิทยาลัยราชภัฏนครปฐม



7202304

Fundamentals of Geographic Information System



Chapter 8: Spatial Analysis I

Course: Fundamentals of GIS (QGIS-based)

Topic: Basic Spatial Queries and Relationships

Duration: 3 Hours (Lecture + Lab)



Learning Objectives

Explain spatial analysis concepts

Differentiate attribute and spatial queries

Perform spatial queries in QGIS

Apply selection tools

Interpret analysis results



What is Spatial Analysis?

Examines spatial relationships

Identifies geographic patterns

Solves location-based problems

Supports spatial decision-making



Attribute Query

Based on attribute data

Uses logical expressions

Example: Population > 100,000

Tool: Select by Expression

TH_Province — Features Total: 78, Filtered: 78, Selected: 0

Update All Update Selected

Expression

☐ AMNAT CHAROEN

☐ ANG THONG

☐ BANGKOK

☐ BURI RAM

☐ CHACHOENGSAO

☐ CHAI NAT

☐ CHAIYAPHUM

☐ CHANTHABURI

☐ CHIANG MAI

☐ CHIANG RAI

☐ CHON BURI

☐ CHUMPHON

☐ KALASIN

PROV_CODE

PROV_NAMT

PROV_NAME

Area_km2_

☐ Case sensitive Exclude Field_

☐ Case sensitive Contains_

☐ Case sensitive

☐ Exclude Field

☐ Equal to (=)

☐ Not equal to (≠)

☒ Contains

☐ Does not contain

☐ Is missing (null)

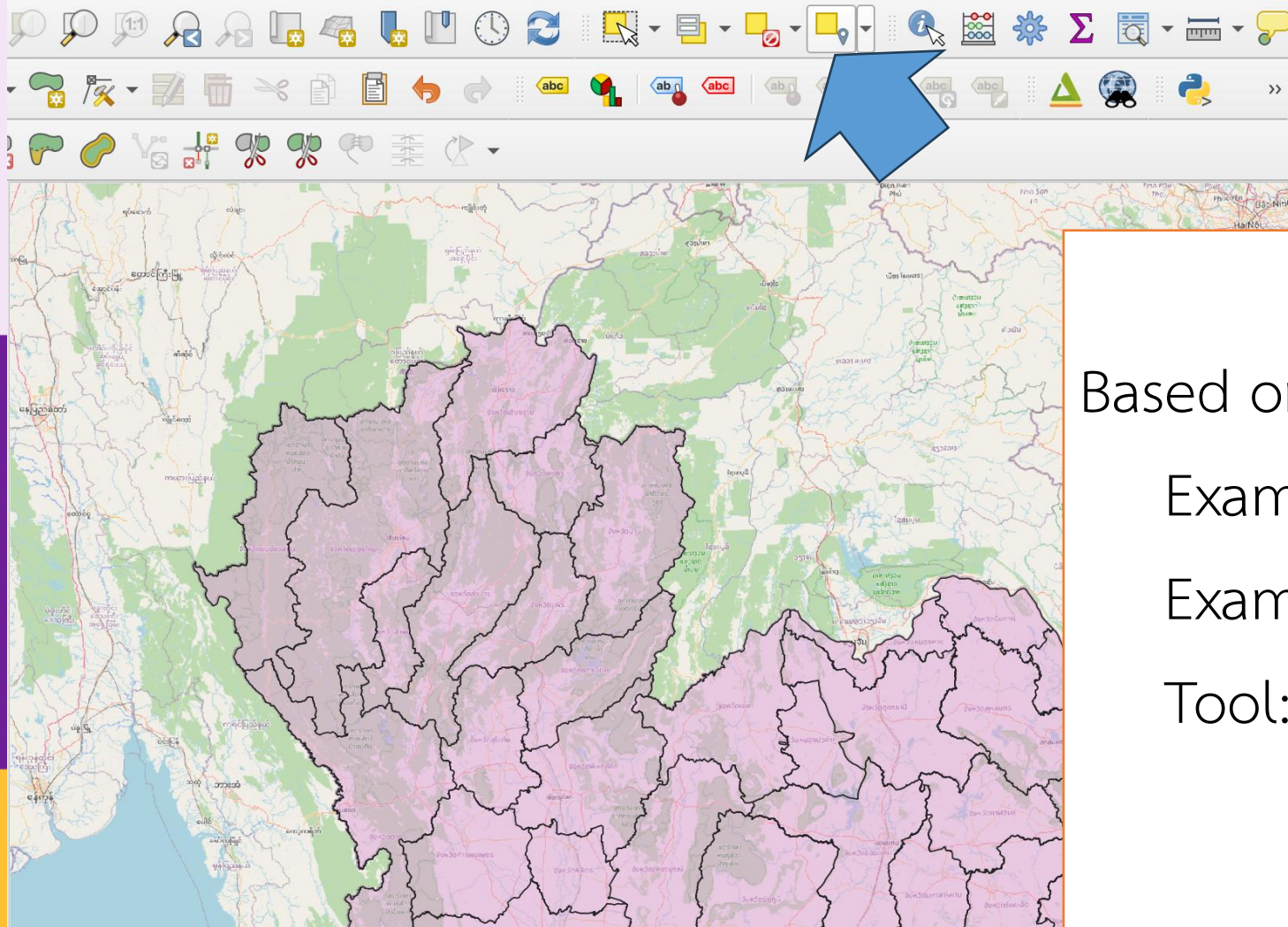
☐ Is not missing (not null)

☐ Starts with

☐ Ends with



Spatial Query



Based on spatial relationships

Example: Schools within district

Example: Houses near river

Tool: Select by Location



Spatial Relationships

- ☒ Exclude Field
- ☐ Equal to (=)
- ☐ Not equal to ($\neq$)
- ☐ Contains
- ☐ Does not contain
- ☐ Is missing (null)
- ☐ Is not missing (not null)
- ☐ Starts with
- ☐ Ends with

Intersects

Contains

Within

Touches

Overlaps



Steps: Spatial Query in QGIS

Load required layers

Open Select by Location

Choose target and reference layer

Select spatial relationship

Run and review results



Practical Examples

Select districts with Population $> 100,000$

Select schools within 1 km of main road

Select agricultural land inside flood zone



Lab Activity (60 Minutes)

Perform attribute query

Perform spatial query

Export selected features

Create simple map layout



Assessment Criteria

Correct query logic

Proper tool usage

Accurate result interpretation

Professional map output



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