LAST TEST



- a. You want to calculate the total length of highways (line) crossing flood risk areas (polygon) → overlaps
 b. You want to identify the city neighborhood (polygon) in which a series of bus stations (points) are located
 → contains
 - c. You want to select all trees (points) that are planted within a certain parcel (polygon) \rightarrow inside d. You want to find out the percentage of deforested sports (polygon) that are located on forest protection areas (polygon) \rightarrow overlaps

Q	uestion 2	0.5 / 0.5 pts
A Q	Region Quadtree is a type of tessellation. Which statements below about the use uadtrees are correct?	of Region
Se	elect the 2 correct answers. An incorrect answer cancels a correct answer.	
	Region Quadtrees are simpler and more adaptive than regular tessellations	Q
	Region Quadtrees lead to a decrease in the amount of memory to store the data	Region (
	Region Quadtrees apply a nested tessellation based on spatial correlation	
	The Region Quadtree is the only irregular type of tessellation that exists	

Band	Central Wavelength (nm)	Bandwidth (nm)	Resolution (meters)
S1	554.27	19.26	
S2	659.47	19.25	
\$3	868	20.6	
S4	1374.8	20.8	500 '
S5	1613.4	60.68	
S6	2255.7	50.15	
57	3742	398	
S8	10854	776	
S9	12022.5	905	1000
F1	3742	398	
F2	10854	776	
60- 50- 40- 30- 20- 10-	Visible Near-I	nfrared Soil	Mid-infrared Green vegetation
1111111111111	Vvalei		

You are interested in the detection of Fire of a certain tree species having temperature are of 527C when burning

Among the available bands, what is the best wavelength do detect this fire? S7

You need to build a NDVI images. Which of the following bans you do not use? S4

The sun irradiance reaching the ground in Band S7 is 4.5 watt/m2

The emission of a Pixel 1 on Earth having a temperature of 310 K with an emissivity of 0.98 in the same band is 0,83 watt/m2. You are now looking at a daytime image of band S7 of pixel 1. The value of radiance is the pixel is predominantly the emission of the pixels

The emission of the pixel

4. Select whether the following statement is true or false

The real body emissivity = 1 - reflectance in all wavelength (FALSE) The Stefan Blotzman equation represents the total emission of the blackbody in the thermal range (FALSE) The frequency and the wavelength are related only by the speed of light (TRUE)

The skin temperature of an object depends on the wavelength the object is being observed with (FALSE)

The skin temperature of an object can be calculated only if the emissivity of the object is known in the band of the instrument and the incoming longwave radiation reaching the object and the outgoing longwave radiation leaving the object is also measured with the same instrument (TRUE)

Commented [AW(SMGW1]: Vegetasi

The following table show	some characteristics of	f one sensor of Sentinel	
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S1	554.27	19.26	
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S8	10854	776	
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F1	3742	398	
F2	10854	776	

What kind of information is directly shown, or it can be deducted about this sensor?

- a. Spatial Characteristics ? Yes
- b. Radiometric Characteristics No
- c. Spectral Characteristics? Yes
- d. Temporal Characteristics? No
- e. IFOV? No
- f. FOV? No
- g. Electromagnetic spectrum range of all single bands? Yes
- For the S2 Band of Resolution of 500m is better represented with the Ground Sampling Distance of the Ground Resolution Cell (GRC) / GSD?



In the graph you find the transmissivity of the atmosphere as a function of wavelength. In the table you find the bandwidth of the MSG Satellite Sensor.

You are interested in the study of the land and not in the study of the atmosphere. Out of the 12 bands of MSG, what bands do you use for your study?

- → 1-4 & 7-11
- → Karena sisanya gaada penyerapan dari atmosphere

7. A topographic map with a map scale of 1:10.000 has been registered using 4 grid intersection points. The root mean square error (RMSE) of the map registration is approximately 20 meter. Is the level of error acceptable?

1 cm : 10000 cm, 1 cm : 1 km, 100 m

The RMSE is not acceptable because the error in map is 2mm which is larger that the typical accuracy of topographic map

8.



- a. Dissolve nodes into vertices (H)
- b. Break Crossing Objects \rightarrow C
- c. Erase dangling objects or overshoots \rightarrow G
- d. Erase duplicates or sliver lines \rightarrow A
- e. Dissolve polygons \rightarrow D
- f. Snap clustered nodes \rightarrow F
- g. Extend undershoots \rightarrow E
- h. Erase short objects → B

9. The RMSE of location given by the system during the process of georeferencing corresponds to :

ightarrow The overall location error of the selected GCP's

10. A cubic convolution geocoding can be done over landcover (FALSE)

You are making a product derived from Remote Sensing. The product quality is very much dependent on the original Diginal Numbers of the image bands. The product is ready after a long chain of image operations. The product is ready after a long chain of image operations. The product must be geocoded to be offered to the people. Your boss comes and tells you: "Do the geocoding at the geocoding at the beginning of the process so sthe final product is accurate and North Oriented.

Is the statement True? (FALSE)

What is the purpose of an orthophoto recitification (To create image free on relief displacement)

11. Define which statements are correct in the following list.

Select 3 correct answers.

- Re-measuring the ITRS all the time is needed because of the tectonic plate motion and the addition of new control stations
- Flattening and semi-minor axis together, can be used to define an ellipsoid.
- Geocentric Coordinates are also known as 3D Cartesian Coordinates

12.



➔ Along the equator

13. Blackbodies that receive radiation can sustain a constant temperature due to the emission of radiation

Coffee appears to be black because of absorption of light

Milk is white due to scattering of radiation

Since one cannot look through them, the transmission of light by both milk and coffee must be very small

A sun photometer is an optical instrument that detects aerosols by comparing the intensity of direct sunlight it observes at different wavelengths (λ) with the theoretically expected intensity for an atmosphere without aerosols. You worked with data from the sun photometer at Cabauw during the exercise accompanying the lecture on atmospheric correction. The graph below shows an example of aerosol optical depth (AOD) determined at wavelengths between 0.34 μ m and 1.02 μ m from a sun photometer.



What is the value of a for particles much smaller than the wavelength of observation, e.g air molecules?





15.



Select for each group of items, the correct fitting concept:

- Location, Types: Relation -
- 604341215, Cuyrst, 434 : Tuple -
- 5 Attributes, 1 Tuple: Relation Instance
- -Location.RegionID, Schools.Type.ID : Foreign Key

- 4 Relations, 3 Tuples: Database Instance
- Schools.IDCode, Region.RegionID : Primary Key

16. 2 statements about RDBMS

- Data Manipulation Language is used to query a database

- A Database schema is a formal description of database structure

17.

irports	ID ·	Name		Gates	Loc	ation	
In the second	EGHI	Southa	mpton	50	010	1000020E6	1000
	EGLK	Blackb	ushe	16	010	1000020E6	1000
	EGMH	Kent		20	010	1000020E6	1000
	EGMD	Lydd		25	010	01000020E6	1000
	EGTO	Roche	ster	5	010	01000020E6	1000
	EGKK	Gatwi	ck	115	010	01000020E6:	1000
Counties	Code	Name		Region	1	Population	Density
	UKJ33	Hamp	shire	SE Eng	land	1844245	489
	UKJ42	Kent		SE Eng	land	1846478	494
	UKJ24	West	Sussex	SE Eng	land	858852	431
Arrivale	Code	ID	Vicitor				
AITIVAIS	LIKI24	ECVV	4211	5			
	11K142	EGKK	4211				
	11K 142	EGMD	524				
	UK 142	EGMH	2301				
	UKJ33	EGLK	326				
	1111/133	EGHI	2548				

Rochester	Kent	
Blackbushe	Hampshire	

SELECT A."Name", B. "Name" as region

FROM "Airports" as A, "Countries" as B, "Arrivals" as C

WHERE A."ID" = C."ID" AND B."Code" = C"Code" AND C."Visitors" < 500

vei	n the follow	ring relation:			
-	gid [PK] integer	class character varying (7)	name character varying (21)	pop_total double precision	
1	1	Village	Tokey	1234	
2	2	Village	Dzongchung	2435	
3	3	Village	Yangchenphu	. 3098	
4	4	Village	Taba	1007	
5	5	Village	Sinmo	2087	
б	6	Village	Chimithangkha	1854	
7	7	Village	Chamgang	2065	
8	8	Village	Talakha	1736	
9	ç	Hamlet	Jidekha	902	
10	10) Hamlet	Tshalunang	765	
11	1.	I Hamlet	Pumola	549	
12	1:	2 Hamlet	Thadranang	203	

→ 6

19.



Look at the map below. It depicts traffic intensity on roads, measured in number of cars and trucks, per day. Use your knowledge of cartographic grammar and thematic maps to select the correct answers from the drop-down lists.

There are actually 2 data variables to be distinguished. The natures of these data variables are:

→ Qualitative Nominal (LAND USE/ DAERAHNYA) + Quantitative Ratio Absolute (Number of Cars/ Truck)

The visual variable chosen for the data variable "number of trucks per day" should create the following perception for it's measurement scale Quantitative

For showing the data variable "number of trucks per day" the visual variable used is Ratio Relative \rightarrow Value/Size/Texture

The cartographic choices made as listed above are, according to the graphic grammar theory

Sub-optimal, a proportional line map should have been used

Question 20	0.3 / 0.3 pts
The cartographic communication process was summarised as "h is it effective?" (a term coined by Prof. Koeman in 1971). Which which part of the sentence) does the Graphic Grammar (as first o 1967) describe?	How do I say what to whom, and part of this process (and thus, elaborated by Jacques Bertin in
do l say	
what	
to whom.	
How	
and is it effective?	



Mean +/- 2 standard deviations is efficient and will definitely lead to white and black pixels

Cumulative count cut will lead to more black pixels than Mean +/- 2 standard deviations

Cumulative count cut is not efficient but is effective

When you switch from the original display to Cumulative count cut you see a decrease in the number of black pixels and an increase in the number of white pixels

22.

You have a satellite image with 3 bands. The objects A, B and C have different spectral properties and thus they have different DN values in the satellite image. Value 255 is the maximum value present in all bands.

	Value in Band 1	Value in Band 2	Value in Band 3
Object A	0	127	127
Object B	127	127	127
Object C	0	255	0

You make a colour composite and select Band 3 for display in Red, Band 2 for display in Green and Band 1 for display in Blue. Each Object will be displayed with a different colour. Select the one correct answer from the list below.

Object A shows in dark Green, Object B in light Blue and Object C in dark Yellow

Object A shows in Cvan. Object B in White and Object C in Green

Object A shows in dark Yellow, Object B in White and Object C in Green

Object A shows in dark Cyan, Object B in Grey and Object C in Blue

The following are	layers in a GIS.	Indicate for e	each of the	n the type o	of geographic	phenomen	on that it represent
Landuse (raster la	ayer) - [Select]		~				
Special buildings	(point layer) - [Select]		~			
Slope (TIN) - [S	elect]	~					
Municipalities (po	olygon layer) - [Select]		~			
Land surface tem Road network (lin	perature (raster l le layer) - discrete	ayer) - contin e field	uous field				
Answer 1:							
discrete field							
Answer 2:							
discrete object							
Answer 3:							
continuous field	i						
Answer 4:							
discrete field							
Answer 5:							
continuous field							
Answer 6:							
discrete object							
discrete held							
Question 2	E La Cal						
Indicate which topo	ological function o	orresponds to	each of the	following sna	atial relations b	etween 2 CI	Sinvers
Layer A represents	Layer B represer	nts Spatial r	elation				ayets.
Buildings	Neighborhoods	Buildings	belong to	certain neio	hbourbood		
Green areas	Built-up areas	Some res	sidential area	is are adjacer	at to forest pat	ches	
Provinces	Cities	A provine	re has a grou	in of cities	ic to forest pat		
Houses	Sewer network	Some he	ucos ara grot	por cities		and a second	
Vegetation types	Soil types	Some no	uses are not	connected to	o a sewer netw	OFK	
vegetation types	soil types	Some gra	ass patches (row on clay	soil areas		

The same lake is represented in both layers Buildings belong to a certain neighbourhood ...is inside... ~ Some residential areas are adjacent to forest patches ...meets... ~ A province has a group of cities ...contains... ~ Some houses are not connected to a sewer network ...is disjoint... ~ Some grass patches grow on clay soil areas ...overlaps... ~ The same lake is represented in both layers ...is equal to... ~ 1

2.

Water Bodies Water bodies



Question 6 What is the difference between the Field of View (FOV) and the Instantaneous Field of View (IFOV)? There is no difference between FOV and IFOV, both define the spatial resolution FOV determines the width of the swath, the IFOV determines the spatial resolution FOV determines. together with the satelike attitude: the spatial resolution and the IFOV determines the swath width. The IFOV determines. together with the satelike attitude: the spatial resolution and the IFOV determines the swath width. The IFOV determines the temporal resolution and the FOV the spectral resolution Question 7 Why do apply a limit for the zenith angle when using geostationary satellites? The earth curvature and increased viewing angles limit the usefulness of the observations at the edges of the swath for quantity The zenith angle instation is applied when conducting qualitative analysis Generationary satellites observe only the sub-satellite region between the limits of the zenith angle The zenith angle is applied to enhance night time observations only Question 8 Indicate for each of the following statements whether it is True or Fajse. A satellite with an orbit inclination angle of 65 degree can observe the polar regions The International Space Station (dituated at 400 km above the earth surface) can also be used as a platform to acquire geostationary observations Genestationary satellites acquire frequent observations from the polar regions and are therefore				
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A sun synchronous orbit is a near polar orbit that allows acquisition of True		Geostationary satellites acquire frequent observations from the polar regions and are therefore very important for meteorological applications	False	~
satellite observations at the same local time	•	A sun synchronous orbit is a near polar orbit that allows acquisition of satelilite observations at the same local time	True	~
Question 9	Questio	n 9		
tenerated Flickr data	enerated	Flickr data.	nterests (POIs) in the city of V	lienna deri
Tradition sector and the sector of the secto	-			
		Internet Kon Automation Bit Antonion Automation Bit Antonion		
TOURST PROTECT		There & Transme		
TOURIST PROFEE		Antonia fare & Antonia		
TOURIST PROTECTION OF THE PROT		-		
TOURIST PROTECTION OF THE PROT	Select the	one correct statement from the following list.		
TOURING PROPER TOURING PROPER WITH THE THE THE THE THE THE THE THE THE T		new a barfielder interest in measures and hardshilters the life another sectors and the sectors and the sector sector sectors and the sector sectors and t		
Totality Tepolar Totality Tep	dining a	ed densing places and less interested in nature and parks.	utionalities. Tourists from the US	are there in
Totality for the set of the set o		New a later field interest in management and blacks from Campany draw more transit in takanan a second second as		
Total and the set of t	diverg a	of driving places and in nature and parks.	r nationalities. Tolarists from the L	D are incated
Total and the set of t	Locale a	new a particular interest in museums and tourists from Germany draw more interest in Natural cadas and enterest	nationalities. Toronto from the	
Total and the set of t	dising a	ad drinking places and less interested in shopping.	nasesantes, rounts from Austr	e are risere à
Torrest near the second of the				
Exercise reserve and the second reserve and head the first before the second reserve at the second resecond reserve at the second reserve at the second reserve at the	dising a	all drinking places and less interested in operas and theaters.		



3.4.0		
What is	the scale of the digital raster map? [Select]	
You dec	ided to use a 1st order polynomial transformation model. What is the minimum number of control points to have an evaluation of the error of your transfe	rmat
[Select		
You hav	e to georeference another large raster map. One of the small features in the landscape represented in the topographic map and in the raster is a small nyr	mid
and Z of	its 4 corners at the ground and the X, Y and Z of the apex. Which point is more convenient to use in the tabular relation between image and cartesian contract of the second seco	ordin
Answer	r -	
Yes		
Answer	2	
No		
Answer	2	
No		
Answer 4	k	
scale	is not defined in a coordinate system	
Answer S	8	
4		
2		
All of	the ground points	
All of Ques	the ground points	
Que	the ground points	
All of Que: You ha	the ground points tion 12 we an AVHRR image. At nadir the image has a spatial resolution of 1 by 1 km. In the figure you can see that the satellite orbits at 700 km above the ground as ge of about 2600 km. select the one correct answer per diatement from the deno dense line.	nd it l
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select the 2 correct answers about spatial reference systems from the following list. An incorrect selected answer cancels a correct selected answer.	
The grid on the map represents the projected position of the geographic coordinates at constant intervals.	
The orthometric height of a point is the vertical distance of the point in question above the Geoid.	
The goald undutation is the deviation between two ellipsoids.	
er D The definition of a geodetic datum includes (among other things) the reference to a particular ellipsoid.	
The longitude of a point on the elipsoid is the angle between the equatorial plane and a parallel containing the point in question. The longitude is zero alone the Gw	
Question 14	
	070.4.
Select the correct answers from the drop-down lists.	
If you were mapping the amount of farmland in the USA, you would choose a/an [Select] rojection to preserve area. Because the	ne USA is located in the mid
latitudes, you might consider a/an [Select] v projection with lines of intersection, or [Select] v near the "top"	and "bottom" of your subject
area to reduce the distortions.	
Answer 1:	
true-scale	
# equivalent	
Answer 2:	
cylindrical	
conical	
Answer 3:	
standard parallels	
transverse parallels	
Question 15	
How do we calculate the radiance reaching the satellite instrument along the sketched path?	
Where k is the attenuation (or extinction) coefficient of the atmosphere, and R _{surf} is the reflectivity of the surface. The incoming solar irradiance at top o	of atmosphere is I ₀ .
<u>.</u> .	
Бер!	
$L_{\text{set}} = I_0 \cdot \left(ezp\left(\frac{-1}{4\pi} \cdot k \right) \cdot ezp\left(\frac{-1}{4\pi} \cdot k \right) \cdot R_{met} \right)$	
((COE(0)) / ··· / (COE(0)) / ··· / ······ / ······ / ······· / ······	100 Kill - 100 march
$L = L \left(a \left(\frac{1}{2} \right) \right) \left(\frac{1}{2} \right) $	
$L_{out} = I_0 \cdot \left(exp\left(\frac{-1}{-w(h)} \cdot k \right) + exp\left(\frac{-1}{-w(h)} \cdot k \right) + R_{out} \right)$	
$\begin{split} L_{out} &= I_0 \cdot \left(exp \left(\frac{-1}{evel_N} \cdot k \right) + exp \left(\frac{-1}{evel_N} \cdot k \right) + R_{ourf} \right) \\ L_{tot} &= I_0 \cdot \left(k \cdot exp \left(\frac{-1}{evel_N} \right) + k \cdot exp \left(\frac{-1}{evel_N} \right) + R_{ourf} \right) \end{split}$	
$L_{tot} = I_0 \cdot \left(exp\left(\frac{-1}{each_1} \cdot k \right) + exp\left(\frac{-1}{each_1} \cdot k \right) + R_{torf} \right)$ $L_{tot} = I_0 \cdot \left(k \cdot exp\left(\frac{-1}{each_1} \right) + k \cdot exp\left(\frac{-1}{each_1} \right) + R_{torf} \right)$ $L_{tot} = I_0 \cdot \frac{krag\left(\frac{-1}{each_1} \right)}{krag\left(\frac{-1}{each_1} \right)}$ $L_{tot} = I_0 \cdot \frac{krag\left(\frac{-1}{each_1} \right)}{krag\left(\frac{-1}{each_1} \right)}$	



estion 19	0.3 / 0.3 pts
let the only correct answer from the following list.	
An attribute domain is the same as a column in a table.	
The primary key is the attribute that refers to an identifier in another table.	
In a relational data model, the terms relation and tuple refer respectively to a table and its rows.	
A fansign key must be unique.	
estion 20	
given spatial database we have the following two tables:	
ories (ID:int, type: string, geom.point)	
erways (ID:int, name:string, length:double, width:double, geom:line)	
Factory Type A Factory Type B Waterway	
170 m	
100 m	
· · ·	
100 m 170 m	
sincering uns information, increase now many tupies will the rollowing spartial query return.	
M Factories as f, Waterways as w ERE (ST_Distance (f.geom, w.geom)>100 AND ST_Distance (f.geom, w.geom)<170)AND f.type='TypeA'	
3 tuples	
6 tuples	
4 tuples	
7 tuples	
2 tuples	
1 male	

	Question	21					
	Given the fo SELECT a.E: FROM Ever WHERE a.T Match the i	ollowing SQL query: ventID, a.Name, b.RiskFactor nts as a, Types as b ypeID = b.TypeID AND (b.Ri: tems with the corresponding	r as Risk skFactor > 0.75 OR ; concept.	b.RiskFactor is i	null)		
	ect a.Event	a.EventID, a.Name, b.RiskFactor				projected attributes	~
	ect as Risk a.TypeID = b.TypeID ect =, >, is null					attribute aliasing	~
						join condition	
						predicate symbol 🗸	
	ect AND, C	DR				logical connective	~
	ect! Events	, Types				input relations	~
21.	 selecter primary foreign relation 	rrect Match Options: d tuples / key key aliasing					
		Given the following relations of the students of the second students	tions: Program M MTE MTE MTE MTE MTE MTE MTE MT	raying (10) VisaR (10) ↓ VisaR Characte Y Y N N N N N N N N N N N N N N N N N	Counce) MTEPS MTEPS MTEPS MSS23	12000	
22.		4 attributes, 1 tuple					







PREVIOUS TEST

11. Point 1 ga perlu karena karena topographic udh digeocode, Point 10 ga perlu karena

GSD : zoom in nya seberapa, rumusnya F/H, titik terkecil di citra yg bisa dilihat GCP : rektivitasi citra

7. GSD = H/F, GSD makin kecil makin teliti, cm/pixel

F= 1/IFOV

H = GSD/IFOV

H = GSD/IFOV = 5/ 0.002519

H dari ground, h kecil dari mdpl

- 8. a. Jawabannya TIR : detect suhu, Panchromatc camera = resolusi lebih bagus dari TIR Camera b. Night – before sunrise = biar gaada gangguan panas dari sekelilingnya c. Winter = makin dingin, makin bagus

transmit + radiance/ reflectance + absorption = 1

Opaque = gaada transmission nya = transmission nya 0

Absorp sama reflectance nya aja

Longitude = X

Latitude Y

15.

0.63 + x +

