

Pandora 2019 Puzzle Manual

Day 1	3
1. Adding Places	4
2. ίσος	5
3. {Citadel} = A	6
4. The Young command	7
5. Matchup of the century	8
6. Blackjack	9
7. Counting Squares	10
8. The Grand Tour	11
Dag 2	12
1. It's all in the brochure	13
2. Climbing trees with Prof. Banana!	14
3. Building dogs	16
4. Fun with flags	17
5. Horizontal Rotation	18
6. February in Amsterdam	19
7. Huygens, Schiaparelli, Greeley, and Cassini live here now	20
8. Mod 26	21
Day 3	22
1. ≤ 2 degrees of separation	23
2. Top 2000 Cipher	24
3. A different kind of Palindrome	25
4. Go out and see	26
5. Herringbones	27
6. Hexadoku Digest	28
7. Read the mines	29
8. No extended versions, letters appear more than once	30
Day 4	32
1. I'm a teapot	33
2. Sense	34
3. dtcisnea ni eertms	35
4. FOSDEM '19	36
5. The holes/circles should...	37
6. The Tale of Pandora	38
7. 44100HZ	41
8. Stacking	42
Bonus	43

Pandora TV Music Puzzle	44
Rivest and friends	45
Pandora TV Snake Game	46
Difference	47
Cake Drink Puzzle	48

Day 1

1. Adding Places

By: Frank

Answer: Ravelin

Solution: Each sentence forms a number that represents a letter in the alphabet. The numbers are 14 9 12 5 22 1 18 and translate to NILEVAR which is the reverse for RAVELIN.

The calculations are as follows:

- Between Hall B and Carré -> Between 13 and 15 -> 14.
- Firestarter - Magnets -> 41 (Cubicus is voor $\frac{2}{3}$ afgefikt) - 32 (Bio Magnetisch Centrum) -> 9.
- $52.239267, 6.852825 + 52.239329, 6.855629 - 52.241570, 6.850595$ -> 6 (Pavillion) + 10 (Ravelin) - 4 (Carillon) -> 12.
- $\sqrt{\text{Sport Centre - Mirror}}$ -> $7 - 2$ -> 5.
- Double Silver Coins -> 2×11 (Silver Coin) -> 22.
- Wing - Mirror -> $3 - 2$ -> 1.
- Wing * Pavillion -> $3 * 6$ -> 18.

2. ίσος

By: Wouter

Answer: 52.250, 06.852 WBW basketbalvelden

Solution: All of these have an ISO standard, which produce a coordinate:

08601: date format (yyyy-mm-dd)

09407: Mondopoint shoe sizes

30170: ruby programming

22077: Medical waveform format

00003: preferred numbers

11156: accessible design packaging

Medical waveform format has an older revision, but it points to the new one.

Accessible design packaging is slightly ambiguous, but the other option does not produce a valid coördinate.

3. {Citadel} = A

By: Wouter

Answer: Linde

Solution: The puzzle consists of sets of numbers. The numbers are building numbers on the campus. There are 6 numbers, referring to a few of the buildings surrounding the O&O square. On the campus map, the building numbers are in a roughly 2x3 shape, which indicates braille. The title is a reference to this and it also makes sure you have the correct orientation for the braille code. Once you start solving the puzzle, the sentence "GOTOLINDEQUICK" should appear.

4. The Young command

By: Staal

Answer: Gallery

Solution: STS-1 was a space shuttle mission commanded by astronaut John Young. For all other missions, look up who their commander was.

Realize that all pictures stand for planets, from left to right:

Uranium stands for Uranus, the Saturn V rocket stands for Saturn, the sculpture of Venus for Venus, the Mars bar for Mars, Freddy Mercury for Mercury, The plant in the earth for the Earth, and the 41st symphony of Mozart is also known as the Jupiter symphony.

Order the commanders in the order of the planets, and take the first letter of their last name to find GALLERY.

Mission	Commander
STS 61-C	Robert L. G ibson
STS-75	Andrew M. A llen
STS-104	Steven W. L indsey
STS-3	Jack R. L ousma
STS-2	Joe H. E ngle
STS-41	Richard N. R ichards
STS-1	John W. Y oung

5. Matchup of the century

By: Staal

Answer: Sleutel

Solution: This is a simple tournament bracket for a pokemon tournament. The title hints that the only thing you have to look at here is the pokemon's type matchup. That is, whether its type is super effective on the opponent's type. The following pokemon are represented, from bottom to top, left to right:

Tangela vs Squirtle

Raichu (The character is Lt. Surge, in front of the cartridge of Pokemon Yellow, in this game Lt. Surge only has a Raichu) vs Sandslash

Sudowoodo vs Charmeleon (These are their pokedex descriptions)

Pidgeot vs Ivysaur (These are their Shiny sprites from Pokemon Gold / Silver / Crystal)

Mankey vs Abra (As depicted in the manga)

Caterpie vs Umbreon (As depicted in the animated series)

Growlithe vs Jynx (Can be found by looking up their stats)

Clefairy vs Klang (Pokedex numbers specific to Pokemon Pearl or Pokemon Black)

Round 1

Tangela (grass) beats Squirtle (water)

Sandslash (ground) beats Raichu (electric)

Sudowoodo (rock) beats Charmeleon (fire)

Pidgeot (flying) beats Ivysaur (grass)

Abra (psychic) beats Mankey (fighting)

Caterpie (bug) beats Umbreon (Dark)

Growlithe (fire) beats Jynx (psychic)

Klang (steel) beats Clefairy (fairy)

Round 2

Tangela (grass) beats Sandslash (ground)

Sudowoodo (rock) beats Pidgeot (flying)

Caterpie (bug) beats Abra (psychic)

Growlithe (fire) beats Klang (Steel)

Round 3

Tangela (grass) beats Sudowoodo (rock)

Growlithe (fire) beats Caterpie (bug)

Finale

Growlithe (fire) wins the tournament by beating Tangela (grass)

Growlithes pokedex number is #58, which points us to building number 58 -> Sleutel.

6. Blackjack

By: Staal

Answer: Tangodansers

Solution: See every set of cards as its own game of blackjack. Now add the card that would win the game, i.e. make the total 21. Notice that cards in one game are all of the same suit, so your card should be of that suit as well. Now notice that the top row has exactly 26 cards, the same amount of cards as the alphabet has letters. Use the order of the cards to map them to letters. Now you can map the cards you placed to letters and you'll find Tangodansers, a piece of art near the box.

8 of clubs -> T

2 of diamonds -> A

2 of clubs -> N

8 of diamonds -> G

3 of clubs -> O

5 of diamonds -> D

2 of diamonds -> A

2 of clubs -> N

7 of clubs -> S

6 of diamonds -> E

6 of clubs -> R

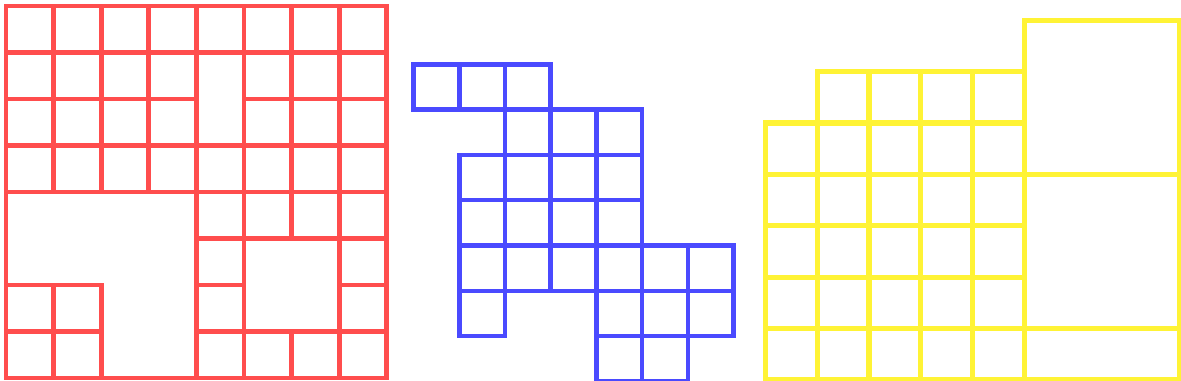
7 of clubs -> S

7. Counting Squares

By: Frank

Answer: Cubicus

Solution: First notice you need to count the 3 primary colors of paint red, blue and yellow. Combining these colors can yield orange, green, purple and brown. These 7 colors are used in the grid. Now you need to draw separate grids for each of the 3 primary colors, using only the lines that are colored using that primary color. These grids are as follows:



When also counting the larger squares, so not just the small ones, the following numbers appear:

Red = 97 squares

Blue = 40 squares

Yellow = 68 squares

$$97 + 40 + 68 = 205$$

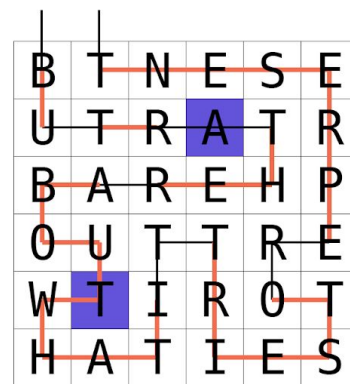
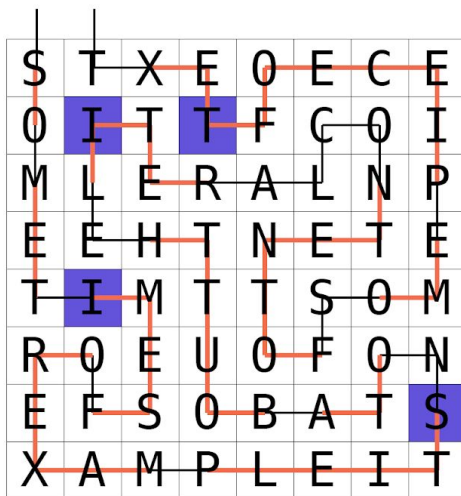
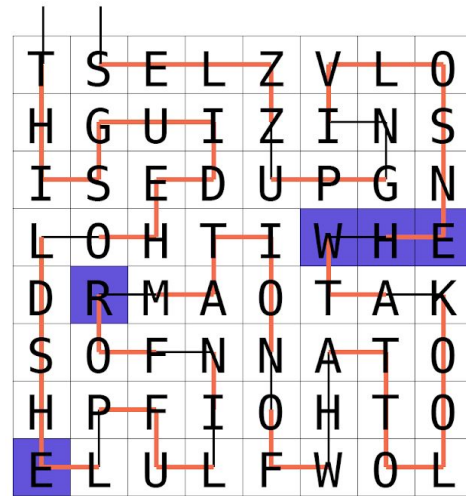
$205 / 5 = 41$, which points to Cubicus.

8. The Grand Tour

By: Kaj

Answer: Teehuis

Solution: First notice that the length of the sentences are perfect squares, these need to be filled into the grid. The title references to a grand tour which you are able to make through the grid obeying the lines which are already there and not crossing any lines. The solution is shown below. Reading the purple squares from top to bottom it spells "TEEHUIS IS WHERE IT IS AT"



Dag 2

1. It's all in the brochure

By: Wouter

Answer: Utrack

Solution: The puzzle is a song, sung by one of our fantastic actors. The song features references to different objects from the UT art brochure (<https://iapandora.nl/media/pdf/architecture-and-art-walking-tour.pdf>).

Teams must find the references and take the corresponding number from the brochure. Convert this number using A1Z26 and you get an anagram. The way to solve this anagram is given by the puzzle.

Correctly finding the letters completes the phrase: The answer is UTrack

#/AZ	naam/name	Corresponding lyrics	reason
3/C	Het Ding / The Thing	you think the only artworks that are worth it 'r made by people who learn and work like you	Artwork constructed by students.
9/I	Carre Roof Painting	but if you walk the rooftops with a painting	I think this one is obvious
19/S	Ideeënvange r / Idea catcher	or asked the idea catcher what he caught	This one is even more obvious
1/A	Het Signaal / The Signal	come run the red light sculpture at the entrance	The Signal is at the entrance is described as resembling a traffic light
21/U	Information Plaza	come view the light creations of miss Blum	The only artwork created by someone called Blum, also light refers to "lichtkrant"
18/R	Faculty Club	The chef-cook and the builder was his father	The son of the architect converted it to a restaurant (though he may not be cook himself)
11/K	De Trom / The Drum	The sober and the rhythmic is my friend	The drum is described as sober and rhythmic in the booklet. No other artwork has a similar description.
20/T	Hogekamp	how high does architecture go If you renovate, then you'll never know	Technically Horst is higher, but Hogekamp has recently been renovated. Also "hoge"

			means high, so you can interpret it that way
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2. Climbing trees with Prof. Banana!

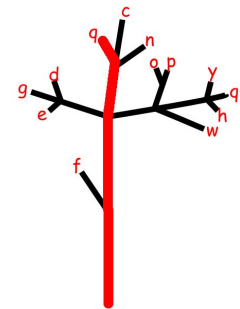
By: Staal

Answer: Hal B

Solution: We simply only have to carefully follow the steps Prof. Banana gives us to solve this puzzle. This yields qjuk, applying a simple Cesar shift of 17 gives you Hal B

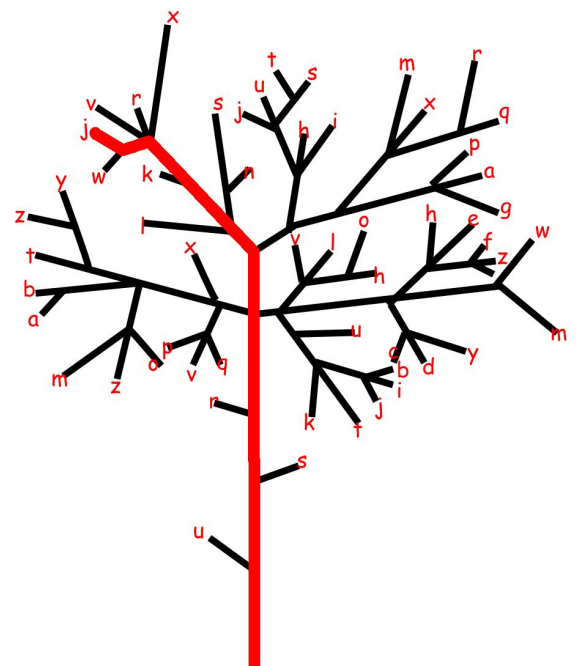
The first tree:

We skip the first branch, then take the center branch because this is the first splitting in three, then we take the left branch because the previous did not split in two. So **q**.



Second tree:

Skip the first three branches and take the middle branch. Then we find one that splits in two, this is the first so take the left, now we find one splitting in 3, take the center one because the previous split in two. Then there's one splitting in two, take the right one because we've already encountered one splitting in two. Now we encounter the eight intersection, which splits in 4. $8 \% 4 = 0$, so we take the first branch, which splits in two, then take the right since we've already encountered one splitting in two. **j**.



Third tree:

Skip the first, take the center one. We're on our third intersection, $3 \% 4 = 3$, so we take the fourth branch counting from the left. Then another one splitting in four, $4 \% 4 = 0$, so take the first branch. Then one splitting in three, previous one was no two, so we take the left. Then the first branch we've encountered that splits in two gives us **u**.

Fourth tree:

Skip the first, then take the center branch. Now we're at the third intersection, this one splits in 4, $3 \% 4 = 3$ so we take the third branch from the left. Then encounter one splitting in two, which is the first so we take the right, then another splitting in two so now we take the left, then one in three, the previous one was two so we take the center, then one in three and the previous one was three so we take the left then the last one which splits in two, we've already seen one of these so we take the right. So **k**.

3. Building dogs

By: Kaj

Answer: Instroom monument

Solution: Realize that the beautiful dog is just a distraction and that the dots represent the buildings on campus, which should be familiar after all this puzzling. The 2 letter abbreviations of all the buildings are shown next to their dot, however 2 sets of buildings are swapped with each other. The puzzle is to be found at the intersection of the two lines.

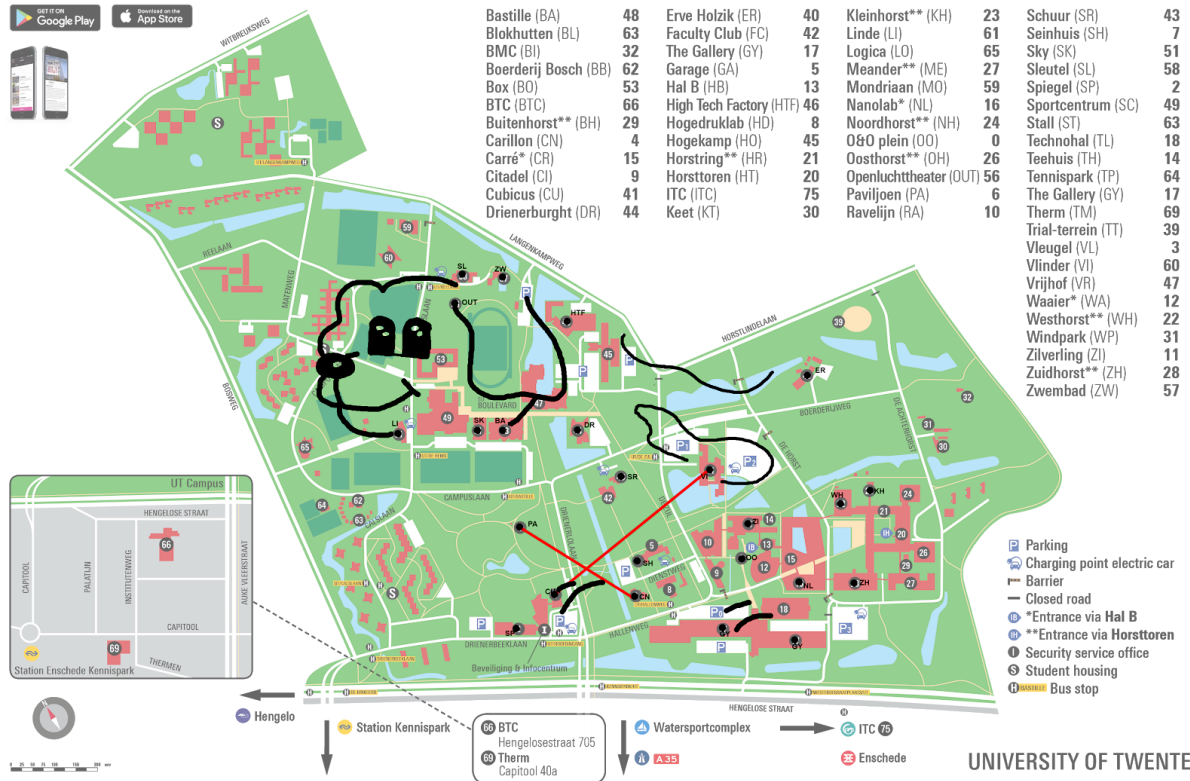
This map is downloadable at www.utwente.nl/campusmap
For a 3d-version see maps.utwente.nl

OR DOWNLOAD THE **CAMPUS APP!**



MAP OF THE UNIVERSITY OF TWENTE

Bastille (BA)	48	Erve Holzik (ER)	40	Kleinhorst** (KH)	23	Schuur (SR)	43
Blokhutten (BL)	63	Faculty Club (FC)	42	Linde (LI)	61	Seinhuis (SH)	7
BMC (BI)	32	The Gallery (GY)	17	Logica (LO)	65	Sky (SK)	51
Boerderij Bosch (BB)	62	Garage (GA)	5	Meander** (ME)	27	Sleutel (SL)	58
Box (BO)	53	Hal B (HB)	13	Mondriaan (MO)	59	Spiegel (SP)	2
BTC (BTC)	66	High Tech Factory (HTF)	46	Nanolab* (NL)	16	Sportcentrum (SC)	49
Buitenhorst** (BH)	29	Hogedrukfab (HD)	8	Noordhorst** (NH)	24	Stall (ST)	63
Carillon (CN)	4	Hogekamp (HO)	45	O&O plein (OO)	0	Technohal (TL)	18
Carré* (CR)	15	Horstring** (HR)	21	Oosthorst** (OH)	26	Teehuis (TH)	14
Citadel (CI)	9	Horststoren (HT)	20	Openluchttheater (OUT)	56	Tennispark (TP)	64
Cubicus (CU)	41	ITC (ITC)	75	Paviljoen (PA)	6	The Gallery (GY)	17
Drienerburght (DR)	44	Keet (KT)	30	Ravelijn (RA)	10	Therm (TM)	69
						Trial-terrein (TT)	39
						Vleugel (VL)	3
						Vlinder (VI)	60
						Vrijhof (VR)	47
						Waaier* (WA)	12
						Westhorst** (WH)	22
						Windpark (WP)	31
						Zilverling (ZI)	11
						Zuidhorst** (ZH)	28
						Zwembad (ZW)	57



UNIVERSITY OF TWENTE.

4. Fun with flags

By: Daniel

Answer: 52 - Boortoren

Solution: The top flags are flag semaphore. The first signal indicates the following flags are numbers, then six numbers follow. The eight signal indicates the previous signal should be discarded, followed by another four numbers. In total this gives us nine numbers:

413275436. The bottom flags are Dutch province flags. Each of the numbers matches with a province flag, so taking the nth letter of the province name in Dutch will result in Boortoren.

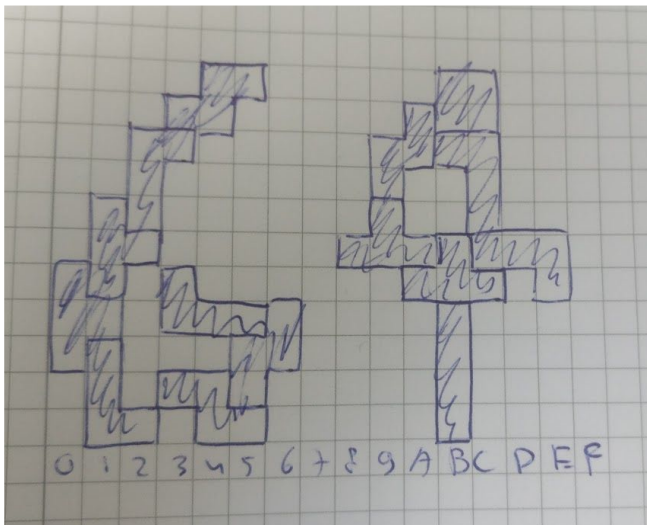
5. Horizontal Rotation

By: Daan

Answer: 64 (TennisPark)

Solution: The title indicates that the first number is the amount of horizontal movement and the second number the amount of rotation. Use this to let the Tetris blocks fall down to form a pattern. The pieces move to the right and rotate counterclockwise

The final pattern looks as follows:



6. February in Amsterdam

By: Daniel

Answer: 60 - Vlinder

Solution: Each of the times should be converted to the timezone in Amsterdam in February, so to GMT+1. Once all zeroes are removed, the result is four coordinates:

- 52.2473774, 6.8514887
- 52.2474210, 6.8519190
- 52.2469879, 6.8515910
- 52.2470000, 6.8520000

These four coordinates are the corners of Vlinder.

7. Huygens, Schiaparelli, Greeley, and Cassini live here now

By: Staal

Answer: (52.242230, 6.857959)

Solution: Huygens, Schiaparelli, Greeley and Cassini are all large craters on Mars. The coordinates refer to more Martian craters. The diameter symbol hints to the fact that you need to find all diameters of these craters. Now, most maps of Mars will not have the diameters or names of a lot of these craters. The best way to find these is to go to the Wikipedia list of craters and search for the coordinates. You'll find that all diameters are whole numbers. When put next to each other they give the coordinates of the answer. WIKIPEDIA list!

Craters:

Coordinates	Name	Diameter
20.1°N 290.6°W	Negril	52.0
43.9°S 45.3°W	Taza	24.0
18.0°N 51.1°W	Darvel	22.0
21.74°N 55.23°W	Soffen	30.0
42.1°N 225.6°W	Bhor	6.0
57.8°S 108.0°W	Ross	85.0
31.31°S 251.4°W	Pal	79.0
20.7°S 260.1°W	Kamativi	59.0

8. Mod 26

By: Daan

Answer: Sky

Solution: First find the year that every programming language was first released. Then do the mod 26 operation on these years. Afterward find the corresponding letter in the alphabet.

Plus:	= 1976 = 0 = A
Bash:	= 1989 = 13 = N
Plus:	= 1976 = 0 = A
Aelric	= ?
Powerhouse	= 1982 = 6 = G
Rheems	= ?
Euphoria	= 1993 = 17 = R
Ciela	= ?
Scratch	= 2002 = 0 = A
Citrine	= 2014 = 12 = M
Claire	= 1994 = 18 = S

This reveals the word ANAGRAMS

Now you should realise that Aelric, Rheems and Ciela are anagrams of programming languages, and repeat the same thing you did before:

Aelric	= Claire	= 1994 = 18 = S
Rheems	= Hermes	= 1986 = 10 = K
Ciela	= Alice	= 2000 = 24 = Y

Resulting in the answer SKY

Day 3

1. ≤ 2 degrees of separation

By: Wouter

Answer: Garage

Solution: The idea of the puzzle is to find the degrees of separation these articles have on Wikipedia.

The wiki articles chosen are just simple references to Pandora in general and also past editions, but they carry no extra meaning. Computer Science -> University of Twente is the entry that should make this clear.

Extra note: These paths are not reflexive, meaning they go only one way. Taking right to left may yield different answers.

The “blowpipe (tool)”, should be an indicator that Wikipedia is to be used. There are two sites that provide easy functionality for this:

<http://degreesofwikipedia.com/> and <https://www.sixdegreesofwikipedia.com/>

The first one of those is outdated and should not be used. It was not necessary to clarify in the puzzle since the site itself has a top notification referring to the second site being better (and the second one is also much faster), so teams are expected to find this on their own.

If they don't: Catalonia - nuclear weapon is an example on which the first one fails.

Teams are also expected to give up on the first one because if you plug in the example pandora -> Inter-Action, it takes an excruciatingly long time.

The example has degree 5, which is described as a long path. As per the title, the threshold is ≤ 2 , meaning anything 3 or greater is considered a long path between them. The teams must then realize that the opposite of long is short and thus a combination of long and short is used to describe these.

Morse uses the same short long notation and thus, when interpreted as morse, the letters G and A are spelled (the puzzle separates with the whitespace between the top three and bottom two). The answer is thus Garage.

A collection of paths and their degrees according to <https://www.sixdegreesofwikipedia.com> :

Pandora - Inter-action = 5

University of Twente -> Adolf Hitler = 2

Amusement park -> abuse = 3

Catalonia -> nuclear weapon = 2

Finance -> solution = 3

Radiation -> safety = 3

The -> alliance = 3

Blowpipe (tool) -> pool noodle = 3

University of Twente - computer science = 2

2. Top 2000 Cipher

By: Daniel

Answer: 2 - Spiegel

Solution: This puzzle is a variation of the book cipher. The first number is the number of a song in the Top 2000 list of NPO radio 2. The second number is the nth paragraph in the song lyrics. Unfortunately, lyrics are not consistent across multiple sites, so the subtitle indicates you should use Genius. The third number is the nth sentence within the paragraph and the fourth number the word in the sentence. The final text is "The next location is a building which will allow your reflection to see you", this should be interpreted as Mirror/Spiegel.

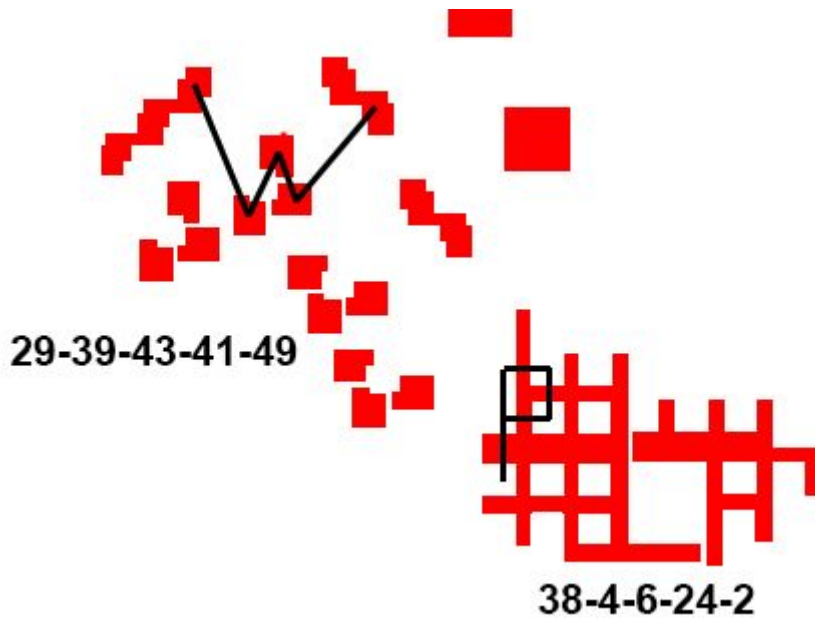
4. Go out and see

By: Kaj

Answer: WP, wind park

Solution: To solve this puzzle realize that the image shown represents the Campuslaan and Matenweg, then simply connect the houses which are represented by the numbers.

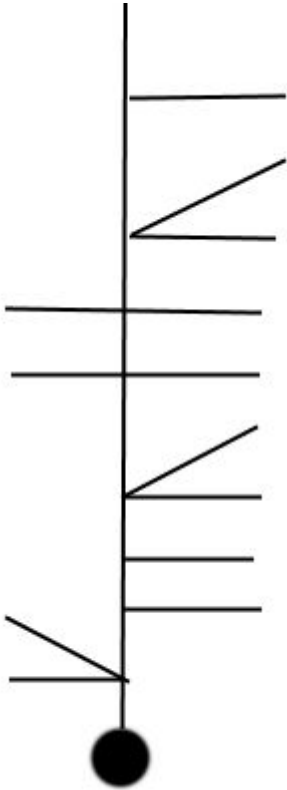
Because Google Maps is not accurate at all, you will probably have to go to the location itself to find out the exact locations of each house number.



5. Herringbones

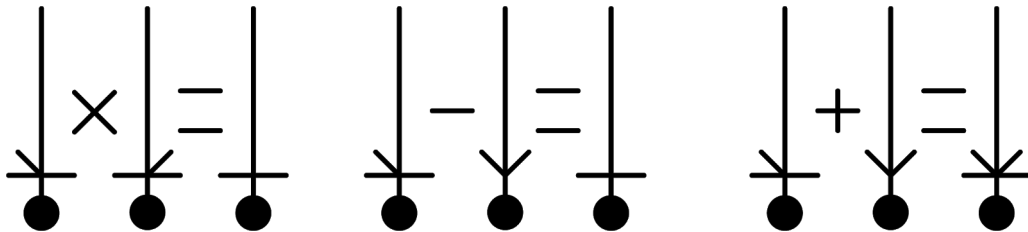
By: Joost

Answer: intersection at (52.24713, 6.85035) with herringbone route from (52.244767, 6.845467)



Solution: Step 1:

Performing the operations on the tuples gives a coordinate, which is the first tuple flipped.



Step 2:

Performing the operations, as in the examples, on the herringbones gives a final herringbone route.

Following the road from the coordinates (and only the road for cars) will bring you to the location.

6. Hexadoku Digest

By: Daniel

Answer: Basketball court Witbreuksweg

Solution: The hexadoku or hexadecimal sudoku should be solved first. The colors in the hexadoku match with the bottom row. The thick black middle lines distinguishes the left and right colors from each other. The resulting string is "d1ccde9e4024df5cd5d469c3ae24a7ed", which is a 32 character hexadecimal string. This in combination with digest in the title leads to the conclusion that it is an MD5 hash. MD5 hashes are fairly weak these days and there are online lookup tools available. Looking up the MD5 hash, for example at <https://hashtoolkit.com>, gives: "Go to Basketball court Witbreuksweg".

Hexadoku

4	7	B	c	8	5	E	2	3	9	a	d	0	1	f	6
9	3	8	E	f	0	4	b	1	2	6	C	7	5	D	A
A	2	D	F	6	9	1	3	0	7	5	8	4	E	C	B
5	6	1	0	A	d	c	7	b	4	F	e	9	8	3	2
6	e	4	1	5	2	7	8	9	f	0	B	D	3	a	c
F	D	2	b	0	6	a	E	5	1	c	3	8	4	7	9
8	0	5	A	3	F	9	c	4	e	d	7	6	2	b	1
3	c	9	7	1	4	B	D	A	8	2	6	5	0	E	F
0	9	7	3	c	1	6	A	F	d	8	5	E	B	2	4
b	4	f	6	d	7	0	5	c	a	e	2	3	9	1	8
E	1	a	8	4	b	2	f	6	0	3	9	C	D	5	7
2	5	c	d	E	8	3	9	7	B	1	4	F	a	6	0
7	8	6	9	2	3	5	4	E	c	b	a	1	F	0	d
D	B	0	4	9	E	F	6	2	5	7	1	A	C	8	3
1	A	3	5	b	c	8	0	d	6	9	f	2	7	4	e
c	f	e	2	7	a	D	1	8	3	4	0	b	6	9	5

D	1	C	C	D	E	9	E	4	0	2	4	D	F	5	C	D	5	D	4	6	9	C	3	A	E	2	4	A	7	E	D
D	1	C	C	D	E	9	E	4	0	2	4	D	F	5	C	D	5	D	4	6	9	C	3	A	E	2	4	A	7	E	D

7. Read the mines

By: Kaj

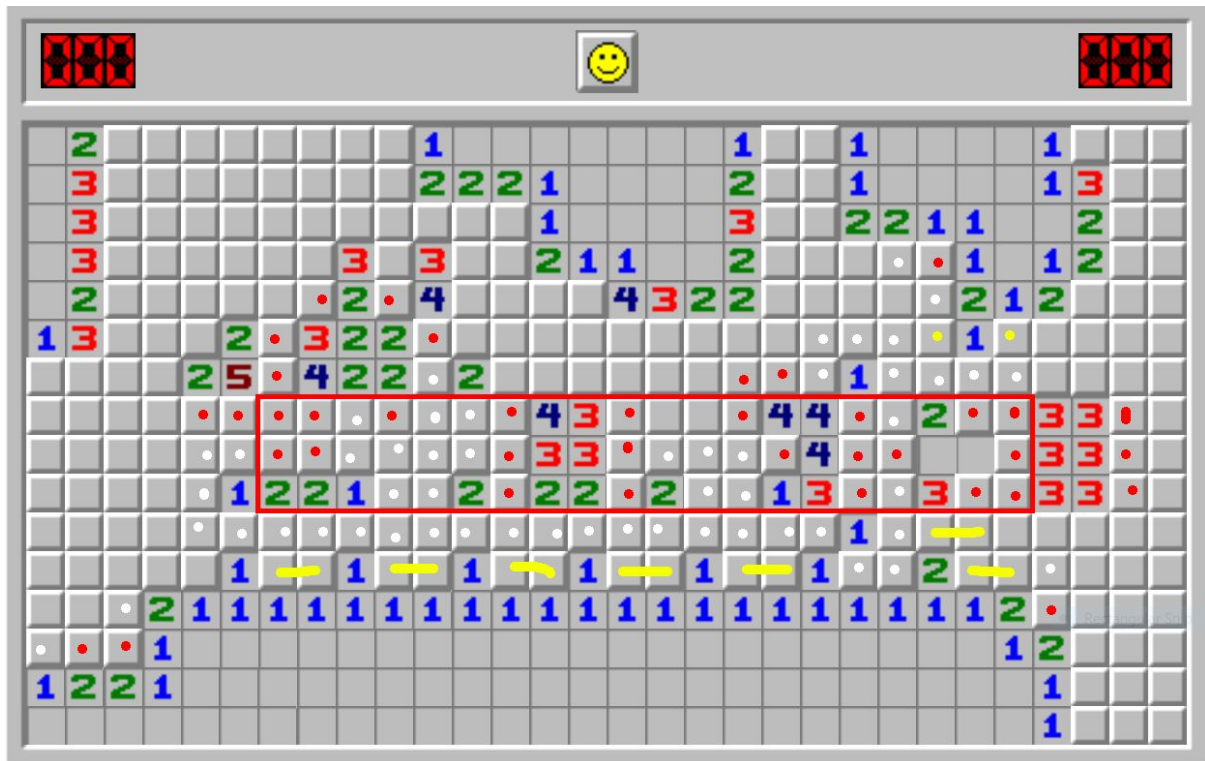
Answer: Gallery

Solution: To solve this puzzle, solve the given minesweeper puzzle as far as possible. The number in each cell represents the number of mines that are adjacent to it if a cell is fulfilled the leftover squares must be empty. In the example picture, the red dots represent mines, yellow for cells which possibly have a mine and white for cells which are definitely clear.

Some situations might be tricky to figure out but the following wiki really helps:

<http://www.minesweeper.info/wiki/Strategy>

After filling in the mines the answer can be read in braille within the red square.



8. No extended versions, letters appear more than once

By: Wouter

Answer: Faculty Club

Solution: The puzzle starts in the top left: All of these words are shifts of each other. Keep in mind that not all shift tools are reflexive. The correct shift numbers can be attained by decoding the second word on <https://www.dcode.fr/caesar-cipher> .

Then the puzzle splits downward and rightward:

Downward:

The numbers obtained can be interpreted as 1-based alphabet indices, as the A = 1 indicates, which gives the hint "POLYBIUS", a reference to the polybius cipher. The full hint is solve like polybius, because it is not an exact polybius cipher, but rather a variation. More on that later.

To the right:

The obtained numbers should be run through a single collatz iteration. The collatz conjecture states that for any starting number n and the rules "if n is even, divide by 2, if n is odd, times by three and add 1" you will eventually reach one. Here they should only apply the rules once. Then they have to subtract the vector with ones and twos. This was a compensation step, sadly.

If done correctly, the resulting numbers should NOT contain any 8's or 9's anywhere.

Filling the 8x8 matrix:

A this point the team should have found polybius and the numbers. Polybius works with a square, so it is logical to assume that this square is a polybius square. There exists an 8x8 extended polybius square in a paper someone with too much time on their hands wrote. This Is Wrong. The title references this in the no extended versions part. A different property of the polybius cipher is that letters are unique, because you fill in some alphabet. Again, this is not how this puzzle goes, and the second part of the title references this. Instead it is up to the team to make the following realizations: A polybius square is filled with letters → Where in this puzzle are letters? → Oh damn, the words from the beginning! The total amount of letters in the words at the start is 64, not coincidentally the same amount of entries in an 8x8 matrix. The teams should fill in the letters left to right, top to bottom continuously.

Solving the 8x8 matrix:

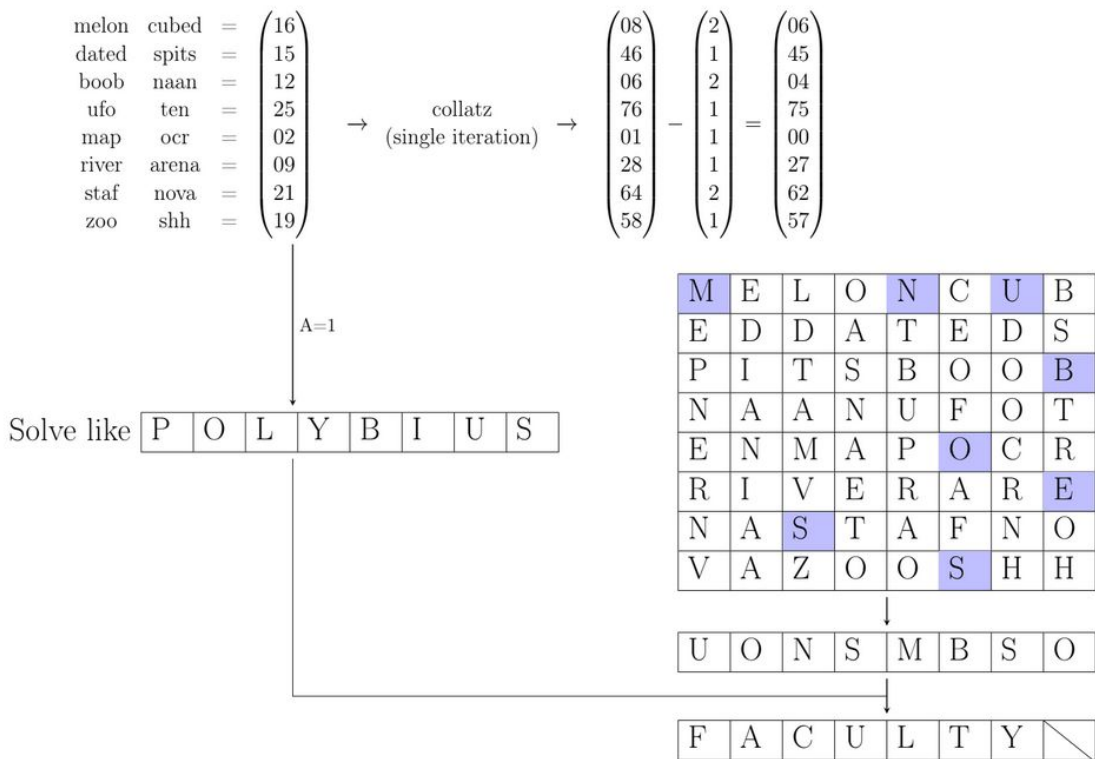
The numbers obtained in the top-right are the polybius "keys". All number under 10 should be prefixed with a zero and then it is possible to use those numbers to find the corresponding letters. In this case the matrix is 0-indexed! With the prefix every number consists of 2 numbers. The first one is the row number and the second one is the column number. The results is a jumbled mess of letters.

The final steps:

The jumbled mess of letters is decryptable with vigenere and the keyword polybius, yielding the faculty club as a result. The last letter is random and should not be used, hence the crossed box, but this should be clear at this stage.

Solved puzzle: (also available in pdf)

no extended versions, letters appear more than once



Day 4

1. I'm a teapot

By: Daniel

Answer: 61 - Linde

Solution: The title is a hint for HTTP status 418 I'm a teapot. After splitting the number in groups of three, it is clear all numbers are HTTP status codes as well. The first letters of all the status codes spell "Not Acceptable" and "Continue", which are again HTTP status codes, namely 406 and 100. Taking the middle two digits, as indicated by the arrows, results in 61.

N	510	Not Extended
O	200	OK
T	429	Too Many Requests

A	202	Accepted
C	409	Conflict
C	201	Created

E	103	Early Hints
P	402	Payment Required
T	307	Temporary Redirect

A	202	Accepted
B	400	Bad Request
L	508	Loop Detected

E	103	Early Hints
C	409	Conflict
O	200	OK

N	203	Non-Authoritative Information
T	429	Too Many Requests
I	507	Insufficient Storage

N	510	Not Extended
U	451	Unavailable For Legal Reasons
E	417	Expectation Failed

2. Sense

By: Joost

Answer: flagpoles at the entrance

Solution:

Step 1: Transcribing the colours to their bases gives:

AACGG.AAATC.AACGG.AAC

AT.GACAC.ACAGG.GAAGA.GTTTT.TGGCG.GGGTC.GTAG

A.CGGAA.CACGG.CG

Where the first and third line are filler, though the solver doesn't know this yet.

Step 2:

A smart puzzler could now already look at finding the start codon, trimming the string to:

5' ATGACACACAGGGAAGAGTTTTTGGCGGGGTCGTAG 3'

Which will then be transcribable to the mRNA:

5' AUGACACACAGGGAAGAGUUUUUGGCGGGGUCGUAG 3'

Step 3:

This gives the codons:

ACA CAC AGG GAA GAG UUU UUG GCG GGG UCG

Which, in single letter notation codes for:

THREEFLAGS

3. dtcisnea ni eertms

By: Wouter

Answer: 52.239331946, 6.858 ten noorden van Carre

Solution: The title are anagrams of the words "distance in meters". Likewise, each of the scrambled words in the puzzle is some obscure measure of distance, which, when expressed in meters and correctly calculated form two numbers that are coördinates. All of the distance measurements have their own entry in wikipedia and the distance in meters is taken from the box in the top right of the wiki page.

The correct de-scrambling is as follows:

Astronomical Unit / (Light-second * decameter) + smoot + (rod / furlong) + yard - foot + ligne
Perch + Fathom

Which produce the following calculations:

$149597870700 / (299792458 * 10) + 1.702 + (5.0292 / 201.1680) + 0.9144 - 0.3048 + 0.0022558$

$5.0292 + 1.8288$

For ease of use, here is the list of units I collected:

Meter (m): 1

Kilometer (km): 1000

Millimeter (mm): 0.001

Mile (mi): 1609.344

Yard (yd): 0.9144

Feet (ft): 0.3048

Inch (in): 0.0254

Hand: Depends on location (see wikipedia)

Span: 0.2286

Fathom: 1.8288

Rack Unit (U): 0.04445

Light-second: 299792458

Astronomical Unit (au): 149597870700

Nautical Mile (nmi): 1852

Rod: 5.0292

Chain: 20.1168

Attoparsec (apc): 0.03086

Smoot: 1.702

4. FOSDEM '19

By: Staal

Answer: Stall.

Solution: AtlantiX has been to FOSDEM and told you about his trip there. The table below are rooms used during FOSDEM for the talks and presentations.

AW1.121	Strawberry Fields - software for photonic quantum computing
Janson	The Cloud is Just Another Sun
AW1.125	An Introduction to Ada for Beginning and Experienced Programmers
K.4.201	LLVM for the Apollo Guidance Computer
AW1.126	Lessons learned from porting HelenOS to RISC-V
K.3.201	.NET and TypeScript Lightning Talks

Taking the first letter of each talk gives "STALL."

5. The holes/circles should...

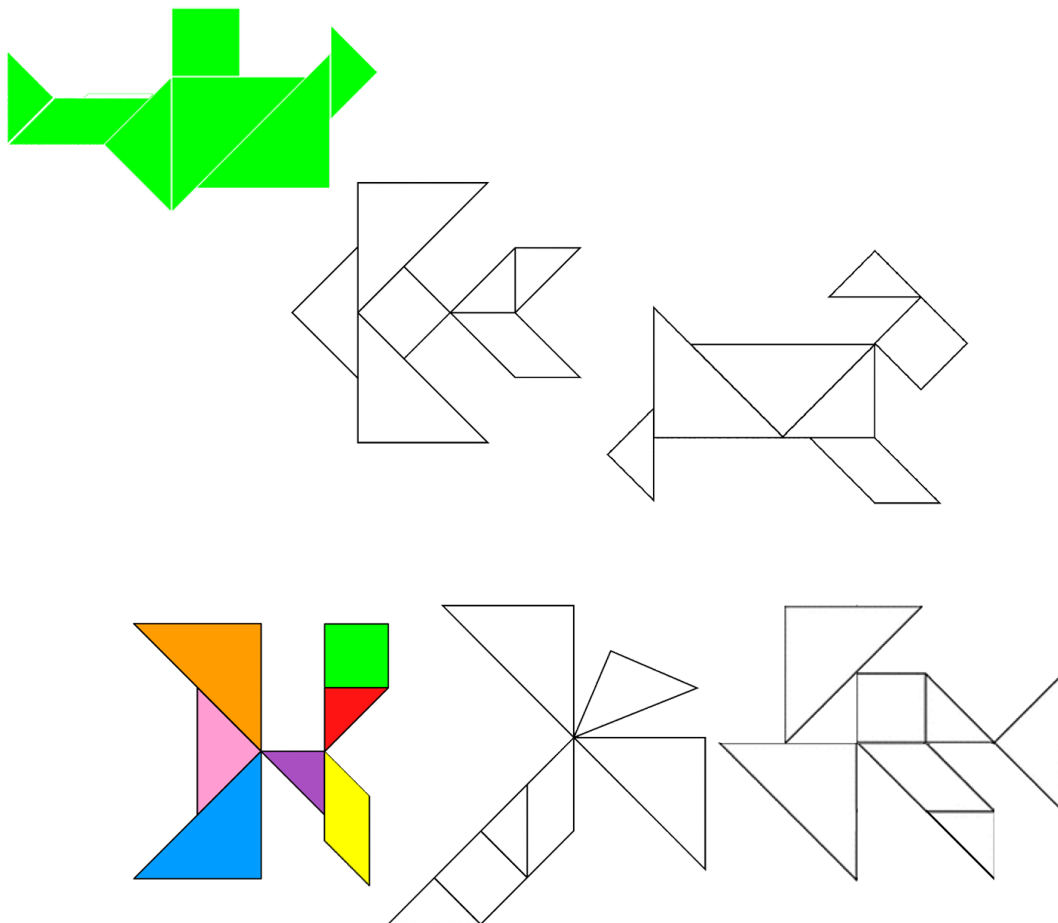
By: Kaj

Answer: CN carillon

Solution: The puzzle results in two answers which are combined for the exact location. To get connect, look at which letters match up with the lines on rectangle 1. To find the correct letter it's important to put the first rectangle on the right in the first image and then only move the rectangle which has not been moved the previous iteration.

For the letters CN connect the holes in the big triangles and only move one of them at a time.

Below are the solutions of each tangram, notice how one of the big triangles keeps the same rotation each iteration.



6. The Tale of Pandora

By: Frank

Answer: Pool

Solution: To solve this puzzle, two things need to be noticed. The first thing is that each paragraph is missing a character. The second thing is that the paragraphs are out of order. When the missing characters are put after each other in the correct order of paragraphs, the following text appears:

GOTOTHEPOOLNOW.

Which hints to look for the next puzzle near the pool.

13. While Pandora was comforted by Epimetheus, she suddenly heard something. A soft but clear voice was calling for her and it came from the box, pleading with her to be let out. Pandora looked at her husband and asked him if she should do what the voice was asking her. Epimetheus agreed that nothing inside the box could be worse than the horrors that had already been released, so they opened the lid once more to see what was left in the box.

8. For a while, she could forget about the box and its unknown contents. But every now and then she would look at the box and wonder what was inside of it, only to be remembered of the promise she made never to open it. Over time her curiosity grew stronger. All she could think about was; what could be inside the box? She could not understand why someone would give her a box if she was not allowed to see what was inside of it. It seemed to make no sense at all to her and she could only think about opening the box and unlocking its secrets.

9. Finally, Pandora could not stand it any longer. When she knew Epimetheus was out of sight, she crept up to the box, took the key off the high shelf, fitted it carefully into the lock and turned it. But, at the last moment, she felt a pang of guilt, imagined how angry her husband would be and quickly locked the box again without opening the lid and put the key back where she had found it. Three more times she did this until, at last, she knew she had to look inside or she would go completely mad.

7. Many gods visited their wedding and brought them beautiful gifts. Zeus, pleased that his trap was working, gave Pandora a beautiful box as a wedding gift. However, there was one very important condition. She must never open the box. Pandora was very curious about the contents of the box but she had promised that she would never open it.

2. Out of love for mankind Prometheus wanted to help them. He went to Zeus, who was king of the gods, and asked if he could give fire to mankind. With fire, they would be able to make light in the darkness, keep themselves warm, cook and make tools. However, Zeus forbade it.

1. A long time ago, in ancient Greece, there were two brothers. Their names were Epimetheus and Prometheus. They were the sons of the Titan Iapetus and the Oceanid Asia. At that time the gods ruled over the world. They did not care for mankind. Humans lived in the darkness, like animals, without tools or the skills to make them.

11. But there was no gleam of gold or treasure. There were no shining bracelets and not one beautiful dress. The look of excitement on her face quickly turned to one of disappointment and then horror. Zeus had packed the box full of all the terrible evils he could think of. Out of the box poured disease and poverty. Out came misery, out came death, out came sadness - all shaped like tiny buzzing moths.

3. Prometheus was clever and made up a plan to steal fire from the gods. On the Isle of Lemnos the god of blacksmiths, Hephaestus, had a fire burning to keep his forge hot. Prometheus traveled to Lemnos and stole fire from the blacksmith. He gave it to mankind and taught them how to forge metal and craft tools. It was the beginning of human civilization. And for a short time, people could live happy and carefree.

12. The creatures stung Pandora over and over. She slammed the lid shut and cried out in pain. Epimetheus ran into the room to see why his wife was screaming so loud. He found her wounded, but still alive. With tears streaming down her face she admitted to her husband that she opened the box and told him about all the misery that came out of it. Epimetheus realized that his brother was right about the gods after all and that this had been Zeus' plan all along. He felt angry, but not at his wife. He was angry at Zeus.

14. All that remained in the box was Hope. It fluttered from the box like a beautiful dragonfly, touching the wounds created by the evil creatures and healing them. Even though Pandora had released pain and suffering upon the world, she had also allowed Hope to follow them.

5. Zeus also came up with a cunning plan to punish mankind. Because of fire, they lived an easy life without worries. With the help of Hephaestus, he created a woman from clay. The goddess Athena then breathed life into the clay, Aphrodite made her look gorgeous and Hermes taught her how to be both charming and deceitful. In this way, she acquired a quality that no other mortal had: curiosity. Zeus called her Pandora and sent her as a gift to Epimetheus.

4. Zeus was furious when he found out what Prometheus had done. To punish him Zeus chained him to a rock in the Caucasus mountains for eternity. Every day an eagle came to him to eat his liver. Because Prometheus was immortal his liver regenerated by night, only to be eaten again the next day. After many years the Greek hero Heracles slays the eagle and frees Prometheus from his torment.

6. Prometheus, who has always been the smarter one of the two, had told his brother to be cautious with gifts of the gods, for they could be dangerous and treacherous, but Epimetheus forgot all about his brother's warning when he saw Pandora's beauty. Completely charmed by the woman, he thought that she could never cause any harm, so he agreed to marry her.

10. No one would know it if she took a little peek, she thought. So she took the key, slid it into the lock and turned it. She took a deep breath, closed her eyes and slowly lifted the lid of the box. She opened her eyes and looked into the box, expecting to see fine silks, gowns or gold bracelets and necklaces or even piles of gold coins.

15. For mankind this meant that their carefree life was over. They had to work hard to survive in a world filled with evil. But at least they had hope to keep their spirits high.

7. 44100HZ

By: Joost

Answer: easternmost

Solution:

Step 1: The title refers to a common frequency at which audio is sampled.

Trying to open the file in audacity points you to importing raw data.

At the end of the file is Answer:a block of text, repeating 'THE LAW', which will be found when importing the audio using any settings.

The image file is called mono.bmp

Using this information it can be figured out that the file should be imported using: U-law, mono and the default settings.

Step 2:

Using these settings audio will be retrieved:

'Well done. Go to hill, with beef, with EQQLUXJIIQPT'

This refers to a hill cipher with key $\{\{b,e\},\{e,f\}\} = \{\{1,4\},\{4,5\}\}$

Using this on <https://www.dcode.fr/hill-cipher> gives EASTERNMOSTZ

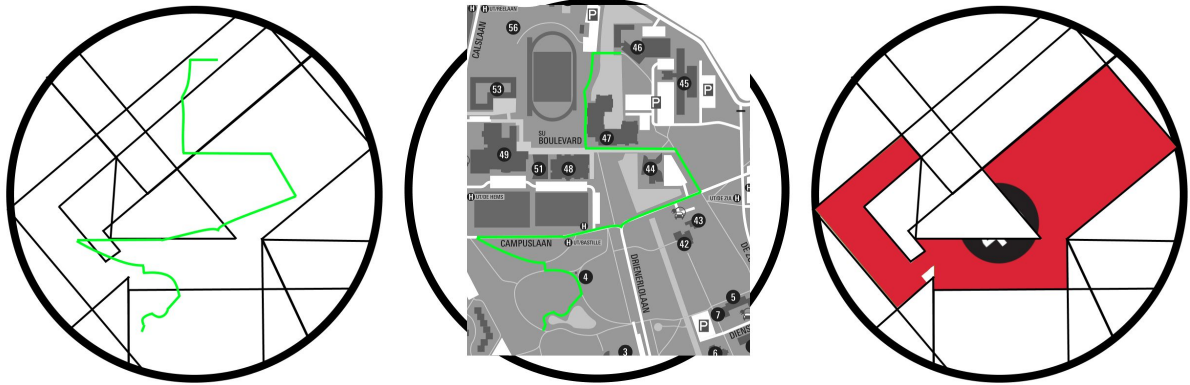
Step 3:

Easternmost in this solution means the easternmost point of the campus, bij het kruispunt van de Van Heeksbleeklaan en de Zomerdijksweg.

8. Stacking

By: Joost

Answer: (52.24097, 6.84856)



Solution:

Step 1:

Layering the circles on each other and then turning them one by one a green path can be formed.

Step 2:

The black outlines form a shape in the middle, which is the outline of the HTF building.

Putting the end of the green line over the bridge next to HTF on the campus map gives the route to the location.

Bonus

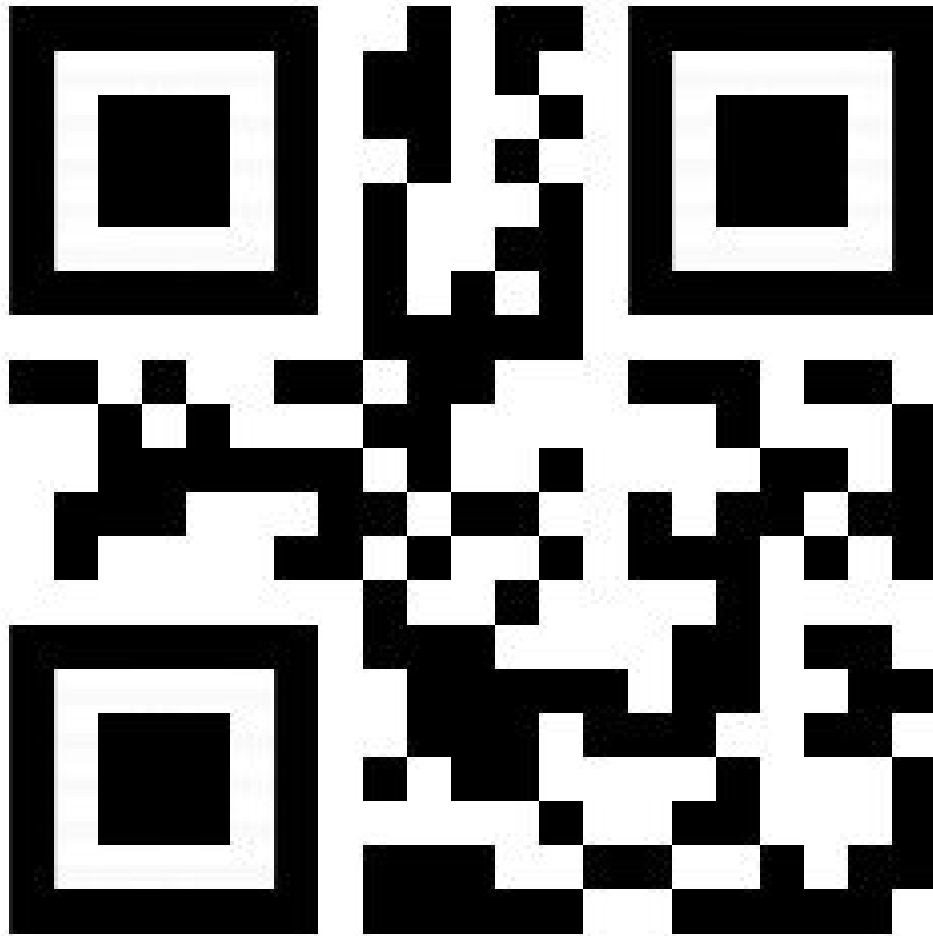
Pandora TV Snake Game

This puzzle was cast on the Pandora TV during whole Pandora as the Pandora Theme.

By: Kaj

Answer: Trial Terrain West

Solution: When placing all the food items in a raster a QR-code appears. This says TT west, short for Trial Terrain West



Rivest and friends

This puzzle could be found on the website during Pandora.

By: Daniel

Answer: Vrijhof

Solution: The title is a hint for the RSA (Rivest-Shamir-Adleman) cryptography system. The puzzle provides the encrypted message, a partial decrypted message and a partial public key. The goal is to decrypt the message.

1. Factorize n in two primes p and q , using <https://www.alpertron.com.ar/ECM.HTM> for example.

$$n = 33A56B1D475BD863AA85AFEC56DD3CA59E8F00000122F$$

$$n = 309169994593634912273215105551412422493489961386381871$$

$$p = 595727328504811528529116939$$

$$q = 518979035878052436595703789$$

2. Calculate $\phi(n) = (p - 1)(q - 1)$

$$\phi(n) =$$

$$309169994593634912273215104436706058110625996261561144$$

3. Brute-force the public and private keys e and d in compliance with the RSA system. Furthermore, the partial decrypted message can be used to quickly verify the results.

$$\gcd(e, \phi(n)) = 1$$

$$d = e^{-1} \pmod{\phi(n)}$$

$$e = 58811$$

$$d = 109151291386775291757133278016346055747239930631664043$$

Decrypt the message and lookup the numbers in an ASCII table:

$m =$ Go to Vrijhof

Difference

This puzzle could be found on the website during Pandora.

By: Daan

Answer: 52.247876, 6.846321

Solution:

For the first part of the puzzle you need to find for each pixel the difference between the 2 images. This can be done using an image editing program like gimp where you put both images in a different layer and select difference somewhere. (in gimp this is done in the layer menu).

This will result in an almost black image. Then you can either select an option to increase the contrast of the image. This will reveal a text that was not really visible before.

Using the paint bucket with 0 tolerance will also reveal the text but slightly worse.

The text is a few random letters. Taking the difference of each value of the letters will reveal coordinates on the campus.

Cake Drink Puzzle

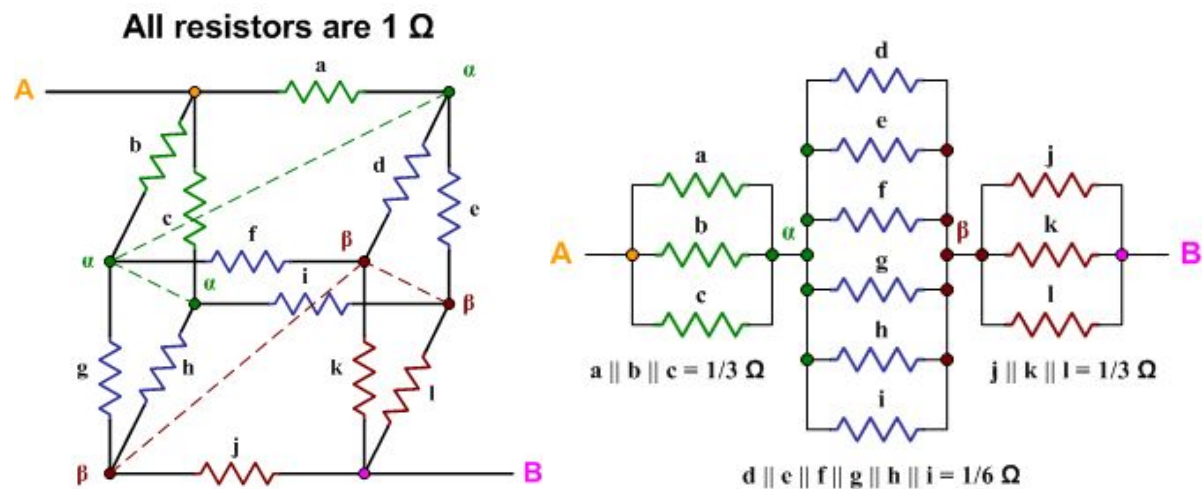
There were some errors when using the correct resistors on the cake. This means the pink smarties should be replaced by light silver grey ones.

Puzzle by: Joost

Cake by: Frank

Answer: 30

Solution: The cake is a cube, with equal resistors on each edge with a value of $28\text{m}\Omega$. Calculating the total resistance between two opposite corners can be done by using symmetry to split the circuit in 3 parallel groups.



Two of them are 3 resistors, 1 is the other 6. These parallel groups can be replaced by their equivalent in a smart way to make the circuit three resistors in series, giving a total resistance of $\frac{2}{3 \cdot 0.028} + \frac{1}{6 \cdot 0.028} = 29.76$. To disregard the tolerance we add a correction written on the cake to get 30.

