INFO 5100 PROJECT 2 FINAL REPORT

A. A description of the work done by each team member. (Consider this your final status update.)

Lini Tan (lt398):
Lini participated in the design of the structure. She visualized the Battle map(containing the map and the pie-line plot in the top right) of the final product and responsible for the combination of each part. She also wrote a little poem in the end as the conclusion.

Yuan He (yh689):
Yuan helped with the design of the general structure of the visualization. After finalized the topic and dataset, Yuan led the part of 'the life span of characters', including the data cleaning, data processing (using MATLAB) and final visualization.

Wodan Zhou(wz262):
Wodan took part in the early stage of the team discussion. However, she did not do the sketch in status report 2. Since then, She was a little distracted about the project. When visualizing the final project. She did not finish her part well so we could not use it. After talking with her, she said she is too busy to keep working on it. So we had to give up her part and replaced it with Lini's "Battle Launch Amount And Win Percentage" pie-line plot. All in all, she did nearly no contribution on visualizing the final project.

B. A description of the data. Report where you got the data. Describe the variables. If you had to reformat the data or filter it in any way, provide enough details that someone could repeat your results. If you combined multiple datasets, specify how you integrated them. Mention any additional data that you used, such as shape files for maps. Editing is important! You are not required to use every part of the dataset. Selectively choosing a subset can improve usability. Describe any criteria you used for data selection.

The datasets are from a competition of Kaggle, including three sheets, the Battles.csv, Characters-Death.csv and Characters-Prediction.csv. We choose two of them to visualize the battles and lifespan of the main characters.

Part 1
The data for "battle map" is mainly from the Battles.csv. We use the parseLine function to read the column name, year, attack-king, defend-king, battle-type, attacker-size, defender-size and location as the variable. Moreover, because this story is fictional, so the exact location of each

battle are vague. Thus we find the scale of each region and random the x and y coordinate within the scale to represent a battle's location.

For the "Battle Launch Amount And Win Percentage" plot, We generate the win percentage and battle amount of each king from the Battles.csv and name the new file "winPercent.csv". The winPercent.csv has 6 fields, year, king, attack amount, win amount, lose amount, win Percentage respectively. Those fields are calculated from the Battle.csv by using excel.Here is the data sample.

| year	king	attack	win	lose	winPer
298	Euron Greyjc	0	0	0	null
299	Euron Greyjc	5	5	0	100%
300	Euron Greyjc	2	2	0	100%
298	Joffrey Barat	4	4	0	100%
299	Joffrey Barat	4	3	1	75%
300	Joffrey Barat	5	5	0	100%
298	Robb Stark	3	2	1	66.60%
299	Robb Stark	7	6	1	85.70%
300	Robb Stark	0	0	0	null
298	Stannis Barat	0	0	0	null
299	Stannis Barat	2	1	1	50%
300	Stannis Barat	3	1	2	33.30%

Part 2

This part of data contains the statistics of the death of characters, and this set has following features: the introduction and death chapter of the character, the gender, the allegiances and the cause of death. Here is part of the original data.

Name	Allegiance:	Death Yea	Book of De	Death Cha	Book Intro	Gender	Nobility	GoT	CoK	SoS	FfC	DwD
Addam Ma	Lannister				56	1	1	1	1	1	1	0
Aegon Frey	None	299	3	51	49	1	1	0	0	1	0	0
Aegon Targ	House Targaryen				5	1	1	0	0	0	0	1
Adrack Hu	House Gre	300	5	20	20	1	1	0	0	0	0	1
Aemon Co	Lannister					1	1	0	0	1	0	0
Aemon Est	Baratheon					1	1	0	1	1	0	0
Aemon Tar	Night's Wa	300	4	35	21	1	1	1	0	1	1	0
Aenys Frey	None	300	5		59	0	1	1	1	1	0	1
Aeron Gre	House Greyjoy				11	1	1	0	1	0	1	0

Firstly, this set contains nearly all the characters of the novel (more than 400 elements), which is almost impossible to show in single figures. Thus, we only left the important persons from nine main allegiance (around 70 elements), which makes our project clear and meaningful.

Since this project would like to show the lifespan of the characters, we pick the intro and death chapter of each necessary character. As for the process of the data, to map the points to a circle, we divide the circle into 5 big parts (5 books) and 80 small segments. And using some formulas (as shown in the below figure) based on Matlab, we get the coordinate of the 80 points.
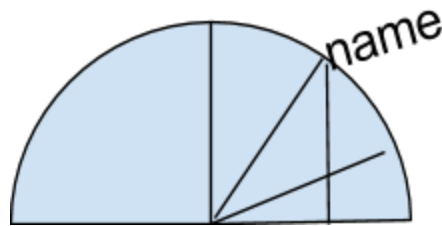
Also, we need a rotate angle to attach the name to the points. Thus we add a feature named 'rot' indicating the angle we need to rotate when we add the name tag. Finally, there are some overlapping characters (some people are introduced in the same chapter). For better visualization, a new feature 'offset' is added to such elements. Here are some examples of the processed data.

| Name	Allegiance	Death Yea	BookDeatl	DeathCha	BookIntro	Gender	Intro	Death	x1	y1	x2	y2	rot	offset	Id
Eon Hunte	Arryn	300	3	80	38	1	7.6	48	881.04	186.46	306.11	1004.5	-55.8	0	1
Monford \	Baratheor	299	3	25	0	1	0	37	600	100	716.72	1086.2	-90	0	2
Guncer Su	Baratheor	299	3	10	0	1	0	34	600	100	827	1045.5	-90	7	3
Bryen Farr	Baratheor	300	5	62	10	1	2	76.4	678.22	106.16	460.5	119.85	-81	0	4
Dale Seaw	Baratheor	299	2	58	10	1	2	27.6	678.22	106.16	1013.5	881.04	-81	7	5
Matthos S	Baratheor	299	2	58	10	1	2	27.6	678.22	106.16	1013.5	881.04	-81	14	6
Allard Sea	Baratheor	299	2	10	10	1	2	18	678.22	106.16	1093.8	521.78	-81	21	7
Hubard Ra	Baratheor	299	5	10	10	1	2	66	678.22	106.16	154.5	373	-81	28	8
Guyard M	Baratheor	299	2	62	22	1	4.4	28.4	769.37	129.56	995.08	906.45	-70.2	0	9
Bryce Carc	Baratheor	299	2	65	29	1	5.8	29	819.97	150.99	980.2	924.72	-63.9	0	10
Robar Roy	Baratheor	299	2	6	29	1	5.8	17.2	819.97	150.99	1088	490.93	-63.9	6	11
Cortnay Pe	Baratheor	299	2	42	31	1	6.2	24.4	833.96	158.12	1070.4	769.37	-62.1	0	12
Emmon Ci	Baratheor	299	2	42	33	1	6.6	24.4	847.73	165.68	1070.4	769.37	-60.3	0	13

C. A description of the mapping from data to visual elements. Describe the scales you used, such as position, color, or shape. Mention any transformations you performed, such as log scales.

Part 1

For the Battle map, firstly I append the battle label to this position correlate with the map image(Because it's fictional, so I cannot find the latitude and longitude). The size of each battle label represent the amount of people who participated in that battle. I use the scaleQuantize to scale the amount because I want to separate the battle size to three levels. Then when hovering each battle label, you will see the detail of that battle(name, type, year, attacker, defender, who wins). There is a little trick. If one wins, his image will be happy. If lose, his image will be sad. It looks like this.
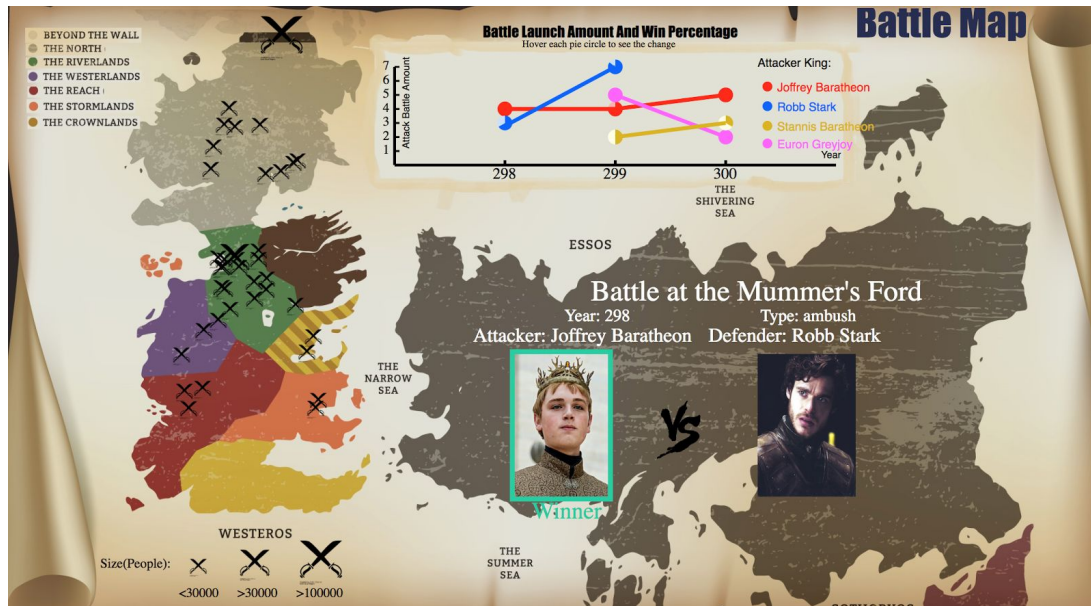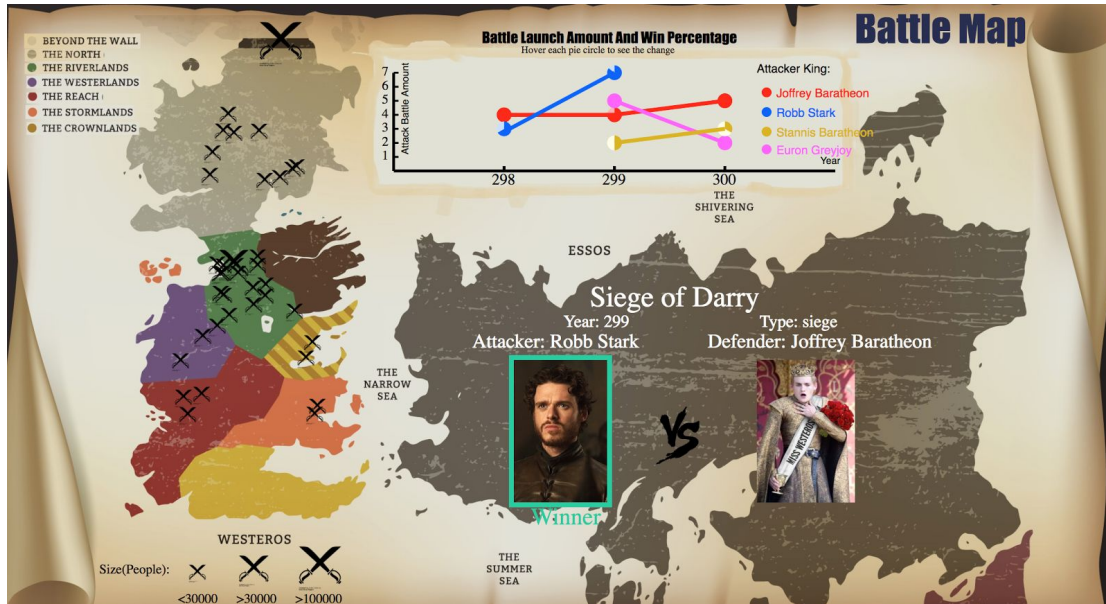
The "Battle Launch Amount And Win Percentage" plot dig deeper information about those battle for us. The x-axis is the year and y-axis is the amount of battles that each king launched. I use the linear scale to do this plot because the distribution is not sparse. Different colors indicate different kings. Each circle in the plot is actually a little pie chart. The darker part is the win percentage. The lighter part is the loss percentage. The combination of these two kind of charts can not only show the simple win percentage but can also tell us their development trace by year. When hovering each little pie, it will show more details and the correlated battle in the left map will be highlighted as a specific color.
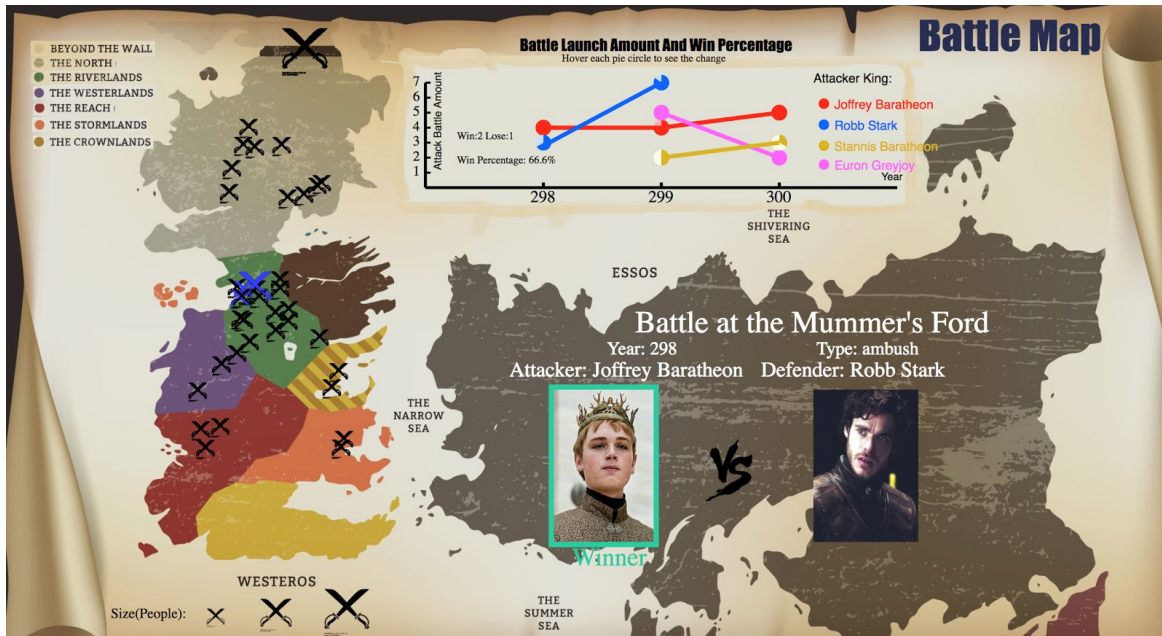
Part 2

There are three main segments of this part, the circle, the allegiance and the information table.

Firstly, the circle is the most important segment. We divided the circle into 5 arcs, which represent different books. As we mentioned in the previous part, we have the coordinate of the character, the rotate angle and the offset (x1, y1,x2, y2, rot, offset). Once we have such data, we can draw Bezier lines (controlled by the centroid of the circle) for the each element. After we finished the lines, we need to add the name tags to the lines. When we add the tag, we rotate the tag 'rot' angle and move the tag based on the offset feature. Finally, when the mouse move over the lines, the color would change.

As for the allegiance part, it is used for choosing different allegiances. When the user choose certain allegiance, it will clear the figure and reload the data of the chosen allegiance.
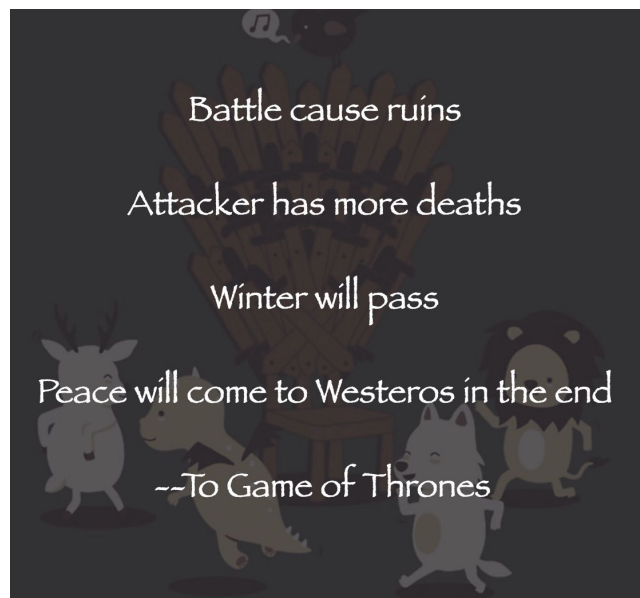
The information tag represent tell users the detail of the chosen character, including the name, the intro and death chapter and the icon.

Life Span of Main Characters
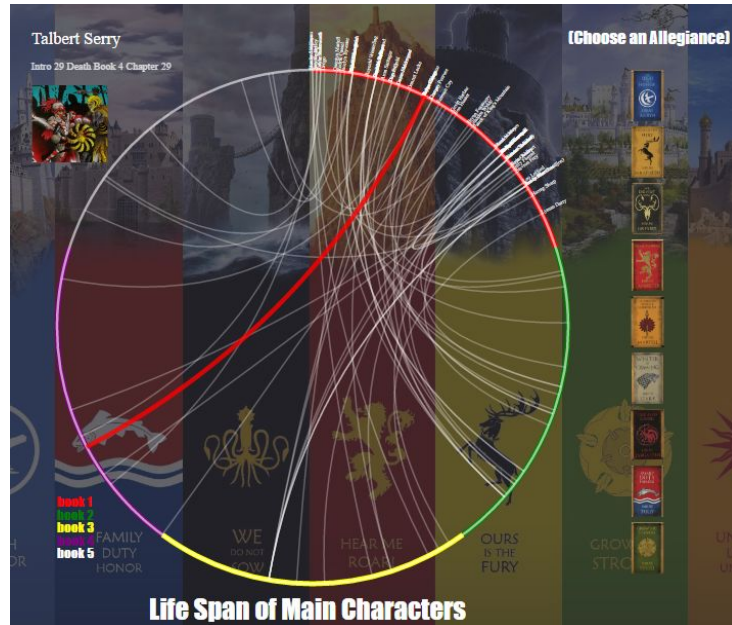
D. The story. What does your visualization tell us? What was surprising about it?
Lini:
Our project visualize Game of thrones with a focus on battle and death. Firstly, we start with a general battle map, describing the 38 most important battles in game of thrones. Then we narrow down to character. We use a circle to indicate their life span, then we can see the death situation of each alliance. At last, we end up our project with a little poem, speaking out our feeling. We found that no matter win or lose in a battle, it cause disaster and death. Only peace is the key to build a harmonious world.

Battle cause ruins

Attacker has more deaths

Winter will pass

Peace will come to Westeros in the end

--To Game of Thrones

Yuan:

Unfortunately, I have never read the book or watched the series of the Game of Throne as the implementer and viewer of the project. However, i do have some interesting finding from the visualization. There are nine main families in the story, and from the life span of their main characters. I can generally figure out the trend of the development of the families. For instance, the Stark allegiance must be a significant allegiance in the story since the number of its main characters is quite large. And the Stark suffered something unexpected in the middle of Book 3 since there are many people died around that time. (as shown in the following figure)
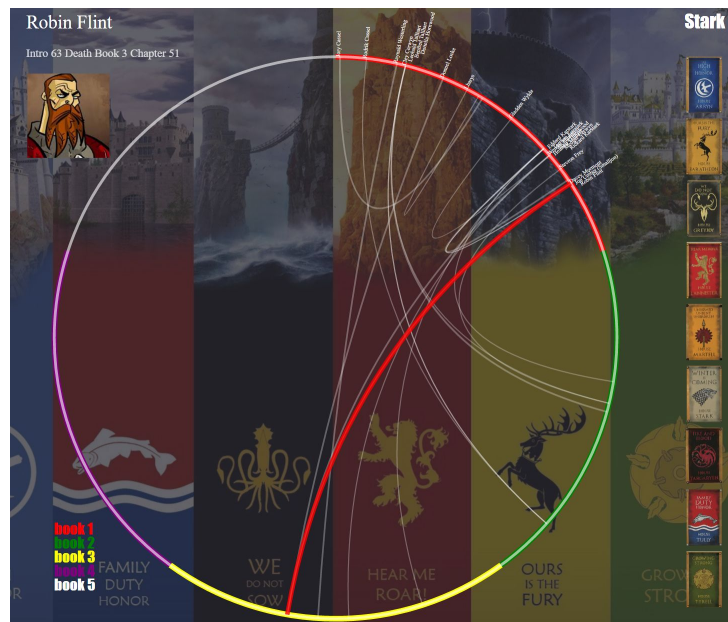
Also we can figure out that there are some peace allegiance. For instance, there exists some allegiance such as Martell and Grayjoy whose number of dead characters is quite small. And there are some active families that participate in nearly all the main affairs such Lanister, since its people dead from a large scale (from Book 1 to Book 5).

In a word, this part give me a general understand of the allegiance and the develop of the story, and help me with figuring out some general trend.