Assignment 1

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Semester 2 Visual Analytics 2018

Assignment/Project Coversheet - Individual Assessment

Unit of Study: COMP5048 Visual Analytics

Assignment Name: Assignment 1 - Graph Drawing

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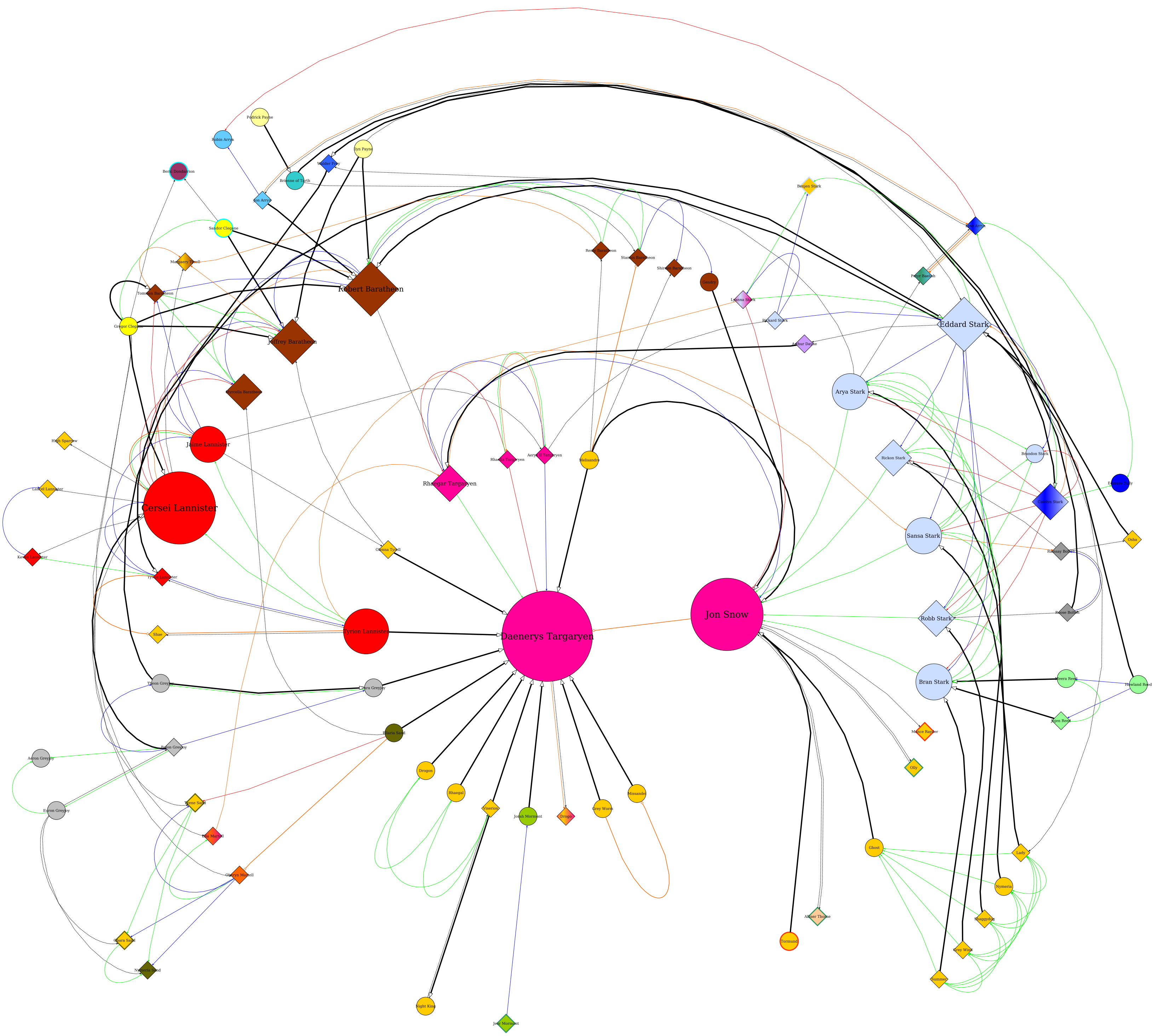
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Joffrey Baratheon
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Arya Stark
Sansa Stark
Robb Stark
Bran Stark
Rickon Stark
Brandon Stark
Myrcella Baratheon
Tommen Baratheon
Margaery Tyrell
Sandor Clegane
Gregor Clegane
Beric Dondarrion
Robin Arryn
Jon Arryn
Podrick Payne
Brienne of Tarth
Ilyn Payne
Walder Frey
Renly Baratheon
Stannis Baratheon
Shireen Baratheon
Gendry
Lyanna Stark
Rickard Stark
Benjen Stark
Arthur Dayne
Petyr Baelish
Lysa Arryn
Aerys II Targaryen
Rhaella Targaryen
Melisandre
Olenna Tyrell
High Sparrow
Lancel Lannister
Kevan Lannister
Shae
Theon Greyjoy
Yara Greyjoy
Euron Greyjoy
Balon Greyjoy
Aeron Greyjoy
Ellaria Sand
Obara Sand
Nymeria Sand
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Tyene Sand
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Rhaegal
Viserion
Jorah Mormont
Jeor Mormont
Drogo
Grey Worm
Missandei
Night King
Tormund
Mance Rayder
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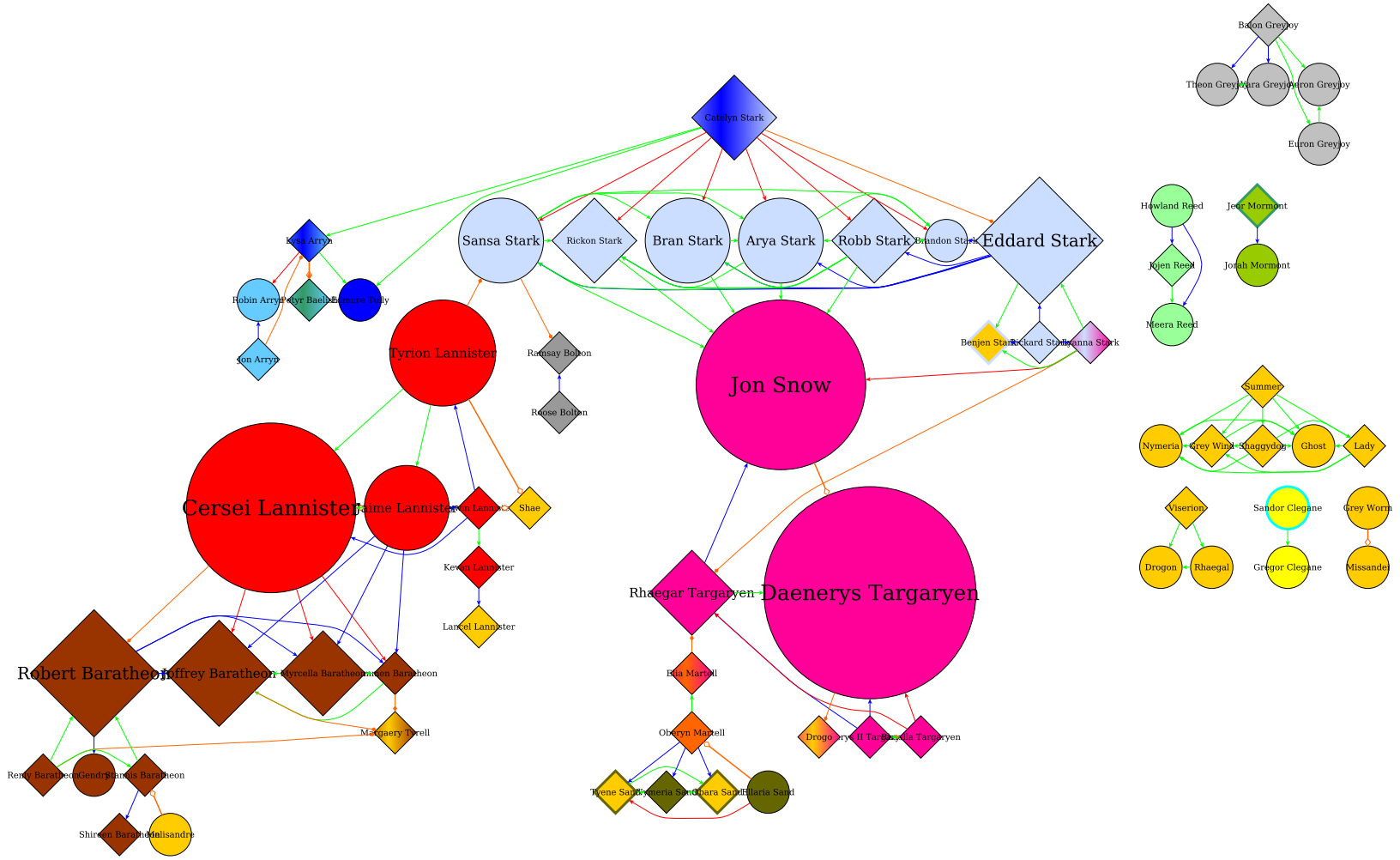
Grey Wind
Summer
Meera Reed
Jojen Reed
Howland Reed
Ramsay Bolton
Roose Bolton
Osha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Sandor Clegane
Grey Worm
Drogon
Rhaegal
Gregor Clegane
Missandei
Catelyn Stark
Sansa Stark
Rickon Stark
Bran Stark
Arya Stark
Robb Stark
Brandon Stark
Eddard Stark
Benjen Stark
Rickard Stark
Lyanna Stark
Jon Snow
Tyrion Lannister
Ramsay Bolton
Roose Bolton
Cersei Lannister
Jaime Lannister
Tywin Lannister
Shae
Kevan Lannister
Lancel Lannister
Robert Baratheon
Joffrey Baratheon
Myrcella Baratheon
Tommen Baratheon
Margaery Tyrell
Renly Baratheon
Gendry
Stannis Baratheon
Shireen Baratheon
Melisandre
Rhaegar Targaryen
Daenerys Targaryen
Elia Martell
Oberyn Martell
Drogo
Aerys II Targaryen
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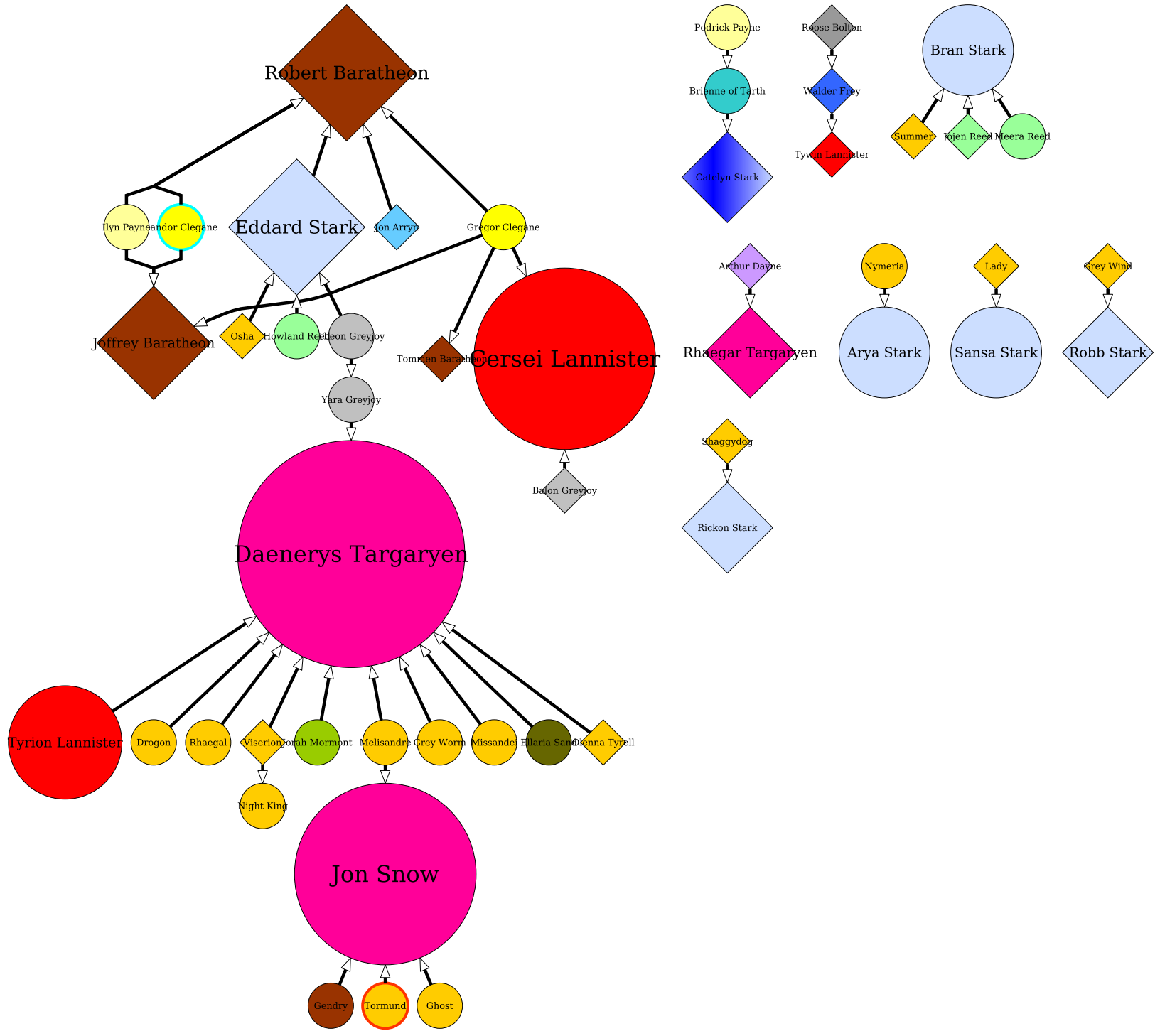
Rosa Arryn
Robin Arryn
Jon Arryn
Petyr Baelish
Edmure Tully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Sansa Stark
Grey Wind
Robb Stark
Shaggydog
Rickon Stark

1 Game of Thrones Visualisation

1.1 Main Visualisation

1.1.1 Legend

1. Node Shape representing Character Status
   (a) Diamond: Dead
   (b) Circle: Alive
2. Node Fill Colour representing House by Birth, with mixed colours representing marriage to that house.

Table 1: *House Colour Legend*

House	Fill Colour
Baelish	
Arryn	
Baratheon	
Bolton	
Clegane	
Dayne	
Dondarrion	
Frey	
Greyjoy	
Lannister	
Martell	
Mormont	
Payne	
Reed	
Stark	
Targaryen	
Tarth	
Thorne	
Tully	
Sand Snakes	

3. Node Border colours to represent groups:

Table 2: *Groups Legend*

Group	Border Colour
Brotherhood Without Banners	
Free Folk	
House Stark	
Night's Watch	
Sand Snakes	

4. Edge colours, line type and arrow type to represent relationship types:

Table 3: *Edge Legend*

Relationship	Edge Colour	Edge Type	Arrow Type
Sibling		thin	normal arrow
Father		thin	normal arrow
Mother		thin	normal arrow
Lover		thin	unfilled diamond
Spouse		thin	filled diamond
Allegiance		thick	unfilled triangle
Killed		dashed	normal arrow

1.1.2 Preparation

Visualisation was created using yed, for which the provided graphml was imported. It is noted that editing of the source was done via vim to ensure correct importation of edges via addition of

```
for = ‘‘edges’’
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in the relation and type sections of the provided graph information. As the visualisation at the current moment is poor, different layouts were tried (organic, hierachy etc) for which a radial setting with wide node dispersal was observed to be the best fit. This is due to the clarity in node positioning with minimial edge crossings whilst preserving this node clarity. Then the status of the characters (either dead or alive) were differentiated through selecting nodes possessin these qualities, and assigning a node shape for clarity (diamond = dead), (circle = alive). Then using the yed property mapper, all the above line, colour assignments were done. Then reflecting the amount of directed incoming edges on nodes, the nodes were resized to show weights.

1.1.3 Strengths and Weakness

There are some key strengths in the above visualisation, with the relationships between each individual explicitly showna and the node placements highlighting key members (Danerys, Jon Snow). Despite this the visualisation possess multiple edge crossings which is not desired. This was attempted to be mitigated through different edge colourings between differing relationship types, however it should still be considered. To make these clearer the subgraphs shown above (page 3 and 4) show clearly the familial and love ties and the allegiance as an attempt to further elucidate these relationships

1.2 Familial and Love Ties

1.2.1 Legend

Same as Main visualization

1.2.2 Preparation

Using the yed object selection tool, and searching up erroneous relation types such as; allegiance and killed we can generate the familial and love ties between characters. A directed tree highlighted this relationships very clearly.

1.2.3 Strengths and Weaknesses

1. Very Clear familial and love ties shown

2. excluded some characters who did not possess these ties, and did not show allegiances
3. Generated Four Seperate Trees

1.3 Allegiance

1.3.1 Legend

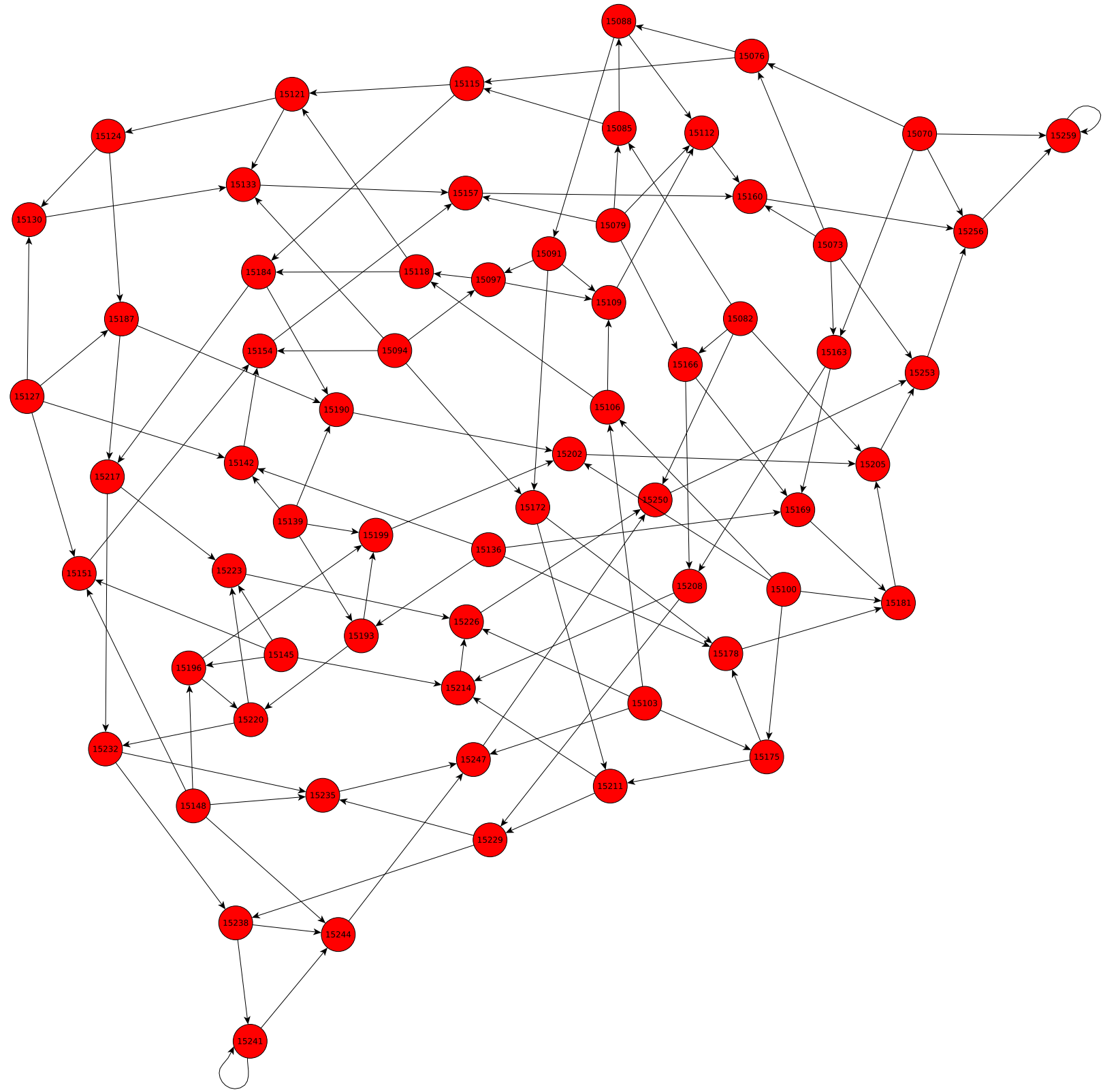
Same as Main

1.3.2 Preparation

Using the object selection tool off the main graph and searching up erroneous relation typs such as father mother sibling killed spouse lover, a visualization of the flow of allegiance can be generated.

1.3.3 Strengths and Weaknesses

1. Very Clear allgegiances shown
2. excluded some characters who did not have allegiances
3. missing familial data
4. Generated many small trees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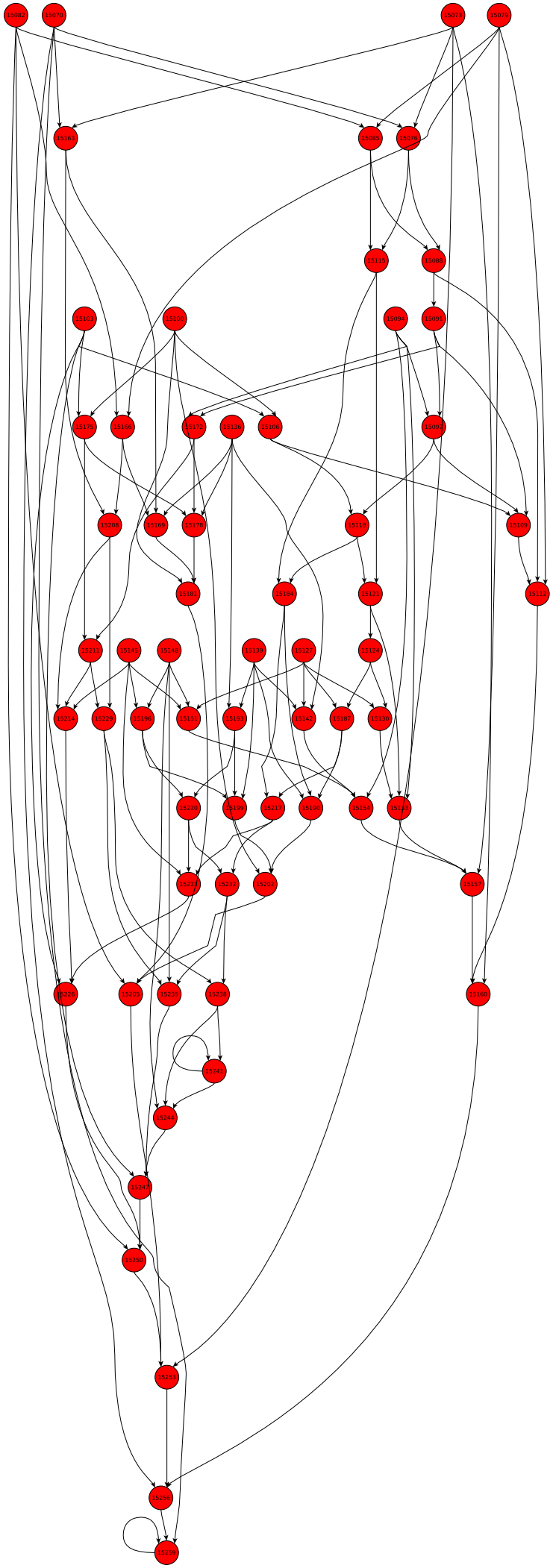
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2 Graph Drawing Contest 1999 B Visualisation

2.1 Organic Layou

2.1.1 Preparation

The graph was constructed using yed. Multiple layouts were attempted in the beginning of the processas the importation yielded a very cluttered very messy layout comprised of multiple edge crossings. After multiple trial and error patterns, an organic layout was selected. This was not particularly good as the spacing of the nodes were very poor and multiple edge crossing were evident. Furthermore there was no clear indication of two nodes with a self directed edge. After some parameter adjustments such as enabling the options of avoiding edge node overlap and compactness arguments under an aspect ratio restriction, the above visualization was produced after node enlargement and coloring which clearly highlights the nodes with self directed edges 15259 and 15241.

2.1.2 Strengths and Weaknessess

1. Very Clear edges and layout with compact drawin
2. Could possibly generate a more regularized graph shape with lesser edge crossings (which seemed impossible with yed)
3. Does not show a clear network flow and has upward pointing arrows with no layering

2.2 Hierachical Directed Graph

2.2.1 Preparation

We provide an alternative visulaisation as according to the parameters in the lecture slides. This was done via hiearchical layout generation with specificed layering.

2.2.2 Strengths and Weaknessess

1. Directed Graph format as in the lectures with downwards pointing arrows and clear layering shown
2. Confusing non-compact layout with multiple crossings that are suboptimal