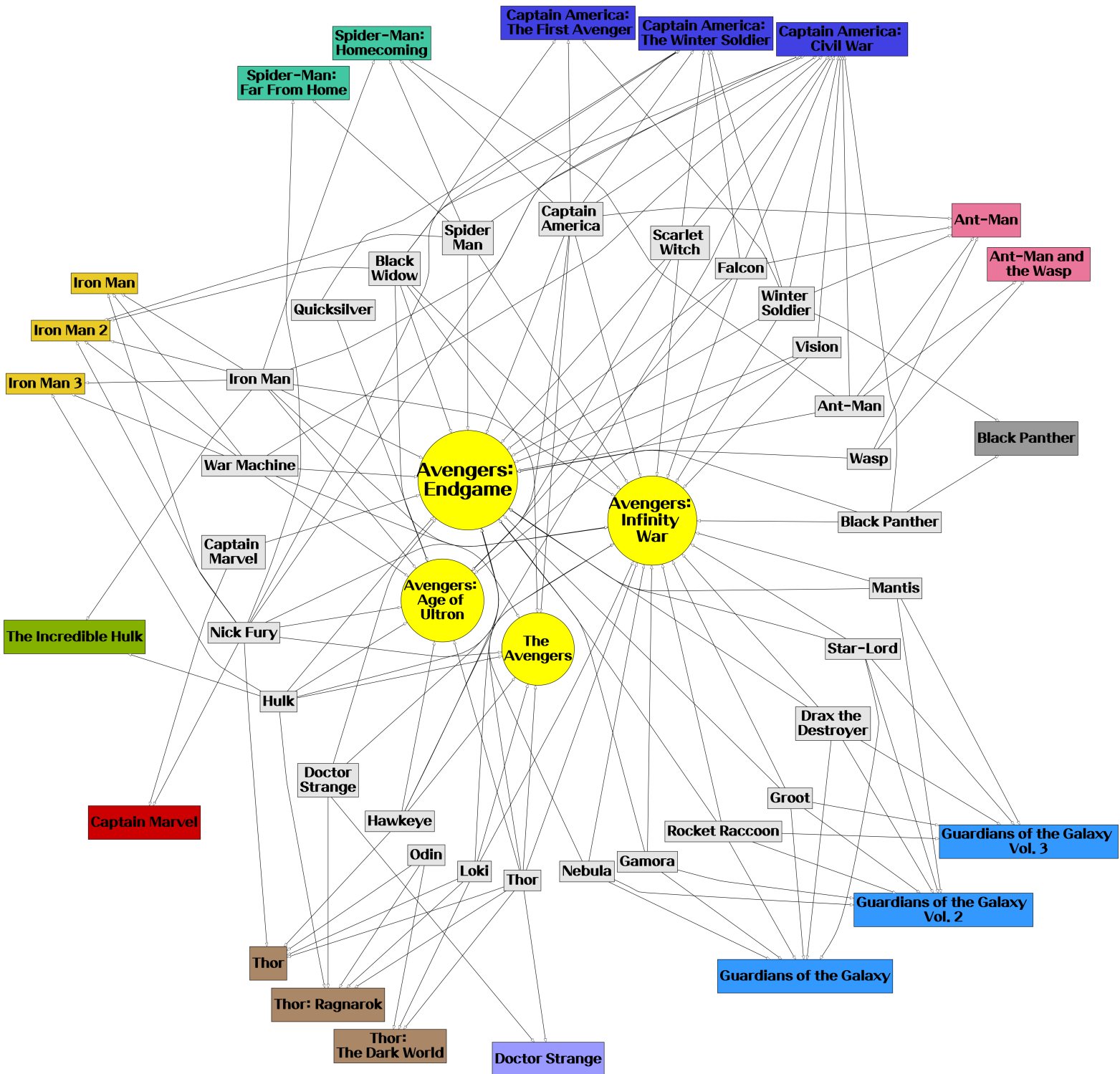# - Visualisation of Marvel Cinematic Universe graph

- Description of Marvel Cinematic Universe graph

For this graph, a pre-processing was not needed hence I imported the marvel gml file straight away in yEd. I used radial layout to centralise Avengers movie series because they are relatively weighted any other movies-those have more heroes than other movies. Even if I haven't selected the Avengers movie nodes to allocate them in the middle, they all tended to be in the center automatically due to the weighted centrality. But another nodes such as 'Black Widow' and 'Iron Man 2' were also situated in the centre, I chose the Avengers movie nodes and made the graph in radial layout with the option 'Selected Nodes' for more accuracy and underline. After this step, I could get the graph that the selected Avengers movie nodes are placed on the innermost circle, hero nodes on the second innermost circle, and the movie nodes which were not Avengers series on the outer circle. I also tuned the 'Minimal Node Distance' and 'Maximal Child Sector Size' until I got the graph as I wanted.

After changing the size of the graph, another important step I've completed was re-locating the nodes. The radial layout automatically located the related nodes next to each other, 'Ant-man' and 'Ant-man and the Wasp' were nearby, for instance. But there were several nodes that still had to be moved for higher efficiency - 'Doctor Strange' was located in between two 'Thor' series, specifically. I did this stage manually, without grouping the nodes or anything else complicated process. Moreover, I coloured each movie series differently in order to distinguish the groups of movie series and catch the user's eyes.

I used 'Organic' option for the edge routing to avoid node overlaps. I originally chose the straight routing style in the radial layout dialogue box, but by selecting organic edge routing option, I could get the graph that doesn't have edges overlapped any nodes and looks more clear than before.

- Strengths

My Marvel graph is well-structured using the radial layout with three circle layers. Each layer has different type of the data like movies and heroes, which was reasonable. Furthermore, it indicates grouped nodes by movie series using appropriate and feature-related colours - 'The Incredible Hulk' in green colour and 'Iron Man' in gold colour, for example. This graph also helps us to catch the connection patterns within heroes and movies.

- Weaknesses

Sometimes it might be not so easy to follow the edge between the source node and the target node because the edges in some part of my graph are mixed up. Another weakness is the arrowhead's size. I was trying to make them bigger, but what I could only do with this software was changing the line type, not the size of arrowhead.

- Description of Greek Mythology Family Tree

For this graph, a pre-processing was needed. Since yEd doesn't support the csv file type, I imported the greek-gods.csv file in Tulip and build the relationship between mother/father and children setting the edges and nodes. After this process, I could get a rough family graph with the hierarchical layout. Tulip software helps us to export the graph in various type such as gml which I needed for further steps, so I saved my pre-processed graph in gml and re-opened the file in yEd.

yEd allows us to manage more specific and detailed editing options rather than Tulip, hence I could modify the graph in a way I desired. First of all, I set the orientation as the 'Top to Bottom' in order to start the flow from the top of the graph and end at the bottom. Next, I cut down the 'Node to Node Distance' because I wanted to make my graph not to be widely expanded. On the other hand, I increased the 'Edge to Edge Distance' and 'Layer to Layer Distance' option to draw my graph to be understandable and not too compact. For the edges, I activated the 'Automatic Edge Grouping' for more space-efficient graph, thus the edges from same mother and father are grouped in a single edge. Lastly, since my greek mythology family graph also indicates the generation of huge family, I placed the characters in the same generation in the same layer.

For a division of the sex, I coloured the female nodes in pink, male nodes in sky-blue an unknown nodes in gray. Furthermore, I set the out-edges of female nodes as red, male nodes as deep blue and unknown as black colour using 'Select Element' function. In addition, the item which doesn't have both mother and father information were shaped as an ellipse. To represent the popularity, I just simply made the top five popular nodes bigger than others and made them have a different shape, octagon. The reason I chose top 'five' data was that the popularity value of the 6th popular data was relatively too small compared to 5th popular data.

- Strengths

My family tree is intuitive and easy to follow the edges to figure out the relationship between this family. The nodes and the edges are shown in a different colour by their sex and this makes us easily distinguish the sex for each god. In addition, the gods in the same generation are located in the same layer and this allows us to find the characteristics of each generation.

- Weaknesses

My graph still has some edge crossings due to the complexity of the nodes' position to cover the whole relationship among more than 100 gods. Besides, it only represents the relationship between parents and children, but not the relationship between mother and father, unfortunately. I tried to add the edges among them, but it was too complicated to draw all the edges in one graph. I guess that there might be another effective way to indicate that relationship rather than connecting all the edges between women and men.

- Visualisation of
  Greek Mythology Family Tree