Please follow the guidelines and tips below when summarizing your computer project results:

1. Please note that you must include your CST model file to your submission.
2. Please note that the project requires you to analyze and explain your results. Do not attach a figure in your analysis without explanations (see also last comment below).
3. SCALING! Don't present a figure of S21 of insertion loss of -0.1dB with an overlay plot of return loss of S11=-40dB!
4. Still regarding scaling: think what is the best scale for a 2D radiation pattern. If your scale is to coarse, the radiation pattern might look like that of an isotropic element, meaning, no preference for any direction. However, if you set the scale to a 0.1dB resolution you might demonstrate some artificial lobes (that occurs due to asymmetric of the model or numerical errors). Try to think what you expect to have and what you would like to present and set your scale accordingly.
5. Last comment regarding scaling – make sure that the reader can see the scale and read the scale marks!
6. If you think that you were not able to explain or demonstrate well the theory or your results by the requested figures, always feel free to add additional figures. For example: if a 3D plot is not enough, add a 2D plot. If a 2D plot doesn't present the entire story, add a 3D plot. Generally, 3D plot of radiation pattern, or gain, is useful to find the peak gain and its direction, while 2D plot is better for presenting quantitative values, such as beamwidth or gain, in a given plane.
7. Round your results: in dB scale, we usually round up to a 0.1dB resolution. This is because that this is usually the measurement accuracy, and if you calculate the error in absolute values due to this round, you will find that this is usually bounded by 2%.
8. The port of the simulation is constant over all the frequency band. For example, if your port should be 62ohms then CST generates a source with a series impedance of 62ohms at all the simulated frequencies.
9. According to the theory, the radiation pattern of a monopole is what we call "omni-directional", meaning, has no dependency in the phi angle. If this is what you got, describe why you were expecting such a result. If you didn't get a pure omni directional radiation pattern, try to think why and explain!
10. The peak gain of a dipole occurs at theta=90deg. This should be also the peak gain of a monopole, based on the reflection concept (replacing the ground plane with an identical antenna as we have above the ground plane, assuming the ground plane is on the Z=0 plane and the antenna is a wire antenna along the Z axis). however, practically, since the ground plane is not infinite, we get an "edge effect" that shifts the peak gain to "higher elevation angles" (where the horizon is our reference plane), meaning – lower theta angles (somewhere between 30deg. to 60deg.). This effect is out of the scope of our course, but it tends to narrow the beamwidth of the monopole, comparing the expected beamwidth of a monopole with an infinite ground plane. Try to think what it means regarding the directivity and gain of the monopole.

11. Theoretically, for an infinite ground plane, you would get zero radiation to elevation angles that are below the horizon, meaning, theta angles between 90deg. to 180deg. Practically, the ground plane is not infinite and therefore, you will see some radiation at these directions. Try to think how this affects the directivity and gain of the antenna.
12. Remember: the tangential part of the electric field must be continuous, therefore, it doesn't generate currents (at z=0+ you also have zero tangential electric field!). However, the normal part of the electric field does generate changes in the charge distribution, so Etheta on the ground plane induces currents. According to your acquaintance with radiation, you should also expect a decaying behaviour of the “near” field next to the monopole meaning, lower phasor amplitude of the (near) electric field as we move away from the monopole (or its side effect - the current on the ground plane). Yet, you might see ripples in in the surface currents on the ground plane - why are they? My intention in asking you to present these figures was to make you think (and explain) why you see what you see.
13. Needles to mention, but when you demonstrate the current distribution on the monopole, compare it to what you expect. In addition, try to explain yourself (and me!) why at a given moment you get the expected distribution (hopefully) while at another point in time it seems that you don’t get what you expect. On the other hand, if you do expect exactly the same current distribution that the simulation shows, explain why this is what you get!).
14. Presenting the fields/currents at t=0, T/4, T/2, 3T/4 is equivalent to presenting the fields at the phases 0, 90, 180 and 270 degrees. Explain why, and then you are allowed to use the fields at different phases instead at different time points.
15. Theoretically, the monopole should have a quarter wavelength. However, if you notice that it is not matched well with its default length (matching meaning a reflection coefficient lower than a chosen threshold of 0.333, or -9.5dB, equivalent to VSWR of 2:1), then try to optimize the length of the dipole in order to achieve the required matching.
16. When you add the reflector, think how it’s going to affect the radiation pattern and present figures that demonstrate it properly. Also, if the matching is changed once you add the reflector, explain why! And how you solve it. Also, check if the way you chose to solve it affects the directivity or not (if it does, needles to mention - explain why!).
17. Make sure that you compare between the gain and directivity. Try to estimate (or guess) what is the expected difference and what is the actual difference. Explain why! Yet, once you explain the reason for the difference between directivity and gain, don’t bother to repeat this explanation, as long as the difference remains the same. However, if for a given scenario the difference becomes larger or smaller, then explain why it is different comparing the previous cases.
18. I suggest you to add a summary and conclusions paragraph for your project. You should include there a brief review of what was done and what you get. Don’t repeat all the explanations in this paragraph, but emphasize the highlights: what was simulated, why we got radiation and how you overcome matching issues.

19. If you present in a single figure overlays of different states (for example, different matching performances at different lengths of the monopole), always add a legend! Don’t let us guess what is which…
20. Maybe the most important remark: don't place a figure if you don't describe what we can see and if it corresponds to the theory (and what is the theory) or if not - why. Every figure should be discussed (as briefly as possible!). If you place the figure just because I asked to, it's your duty to understand why I asked it for and what you should study from that figure (and make sure that we are convinced that you understood).