# 1. Winter

## Part A:

1. Load a mountainous terrain (or generate one, if you prefer). Make sure there is a valley amidst the mountains. Add clouds in the sky and make them look as realistic as you can.
2. Inside the valley, create a small lake. Make the water look realistic by using multiple water textures with displacement (like we did in lab 3).
3. Add a directional light source to act as the sun. Make sure to adjust the appropriate light properties to make the light fit in a winter setting (e.g., blueish color tones, low intensity). Also add shadows using any technique you want.
4. Add sparse vegetation (patches of grass, short bushes, etc.).

## Part B:

5. Create the effect that it's snowing. The snowfall is initially disabled and starts with the press of a key on the keyboard. While the snowfall continues, snow builds up on top of the terrain and the landscape becomes "snowy". The lake freezes and the water turns into ice. The environment is reflected atop the ice lake's surface.
6. By pressing a second key, strong wind starts blowing, affecting the snowfall and vegetation movement.
7. Create the following effects:
    a. With the press of a third key, the clouds start to clear away and the sun comes out. Adjust the light properties accordingly.
    b. The ice in the lake appears to crack and melts back into water.
    c. The snow that was collected in the environment begins melting and starts to roll downhill, filling the lake further.
    d. As the melting of the snow accelerates, an avalanche is caused.

## Bonus:

1. Add a screen-space trembling/shaking effect that happens for a few seconds each time after the player camera touches snow, ice, or otherwise cold surfaces.
2. Make the water look even more realistic by modeling more advanced effects. You can model reflection/refraction, the Fresnel effect, realistic waves with DuDv maps or Gerstner waves, or any other effect you see fit.