**Project 4 a**

**Outline   
  
Three point Lighting**

* **What is three-point lighting?** 
  + Key light
    - Generally shadow casting light

Main light source

* + Fill Light
    - Fill in shadows, compliment of key usually (color), lower intensity.
  + Rim light
    - Generally higher or equal to key intensity.
* **Creating the Key Light** 
  + **Key light-** Is the subject’s main source of illumination and defines the most visible shadow. **Create a key light: Create>Lights> Spotlight**
  + **Name key light “pawn\_key” & create a light group**
    - Outliner
    - Group key light as “lights” in outliner. **CTRL + G  
      -Name group “lights”**
  + **Place the light** at position (x, y, z) = **(13, 27, 21)**  
     -Key lights are generally placed above the camera either on the left or right hand side, depending on where the main light source is coming from.
  + The first way to position a light:   
     -Use the **t** key to show turn on the light’s manipulator tool. Place the target inside the pawn.
  + In the Attribute Editor, change the **Intensity** of the light to **1.5** and the color (H, S, V) to **(60, 0.134, 1)**.  
     -**Intensity** is how bright the light is going to be.   
     -**H=Hue**: The color or shade of the light.  
     -**S= Saturation:** A range of 0%-100% of how pure the color is. Usually color looks duller when less saturated.  
     **-Value** is how bright or dark the color is and represents the grayscale.
* **Render Image**
  + **What is rendering?**   
     -Rendering is a process of generating an image of a model using computer software and give the final appearance of shading, texture, shadows, reflections and motion blur.   
     -There’s **maya software** (don’t use it)- it’s very basic and doesn’t calculate shadows and details as mental ray does.   
     -**Mentalray**: Has more functions to calculate motion blur, supports raytracing for shadows, creates caustics and creates physically correct simulation of global illumination (diffuse, glossy, specular reflection)
  + Setup render
    - **Select Camera**: IPR>IPR Render >Select your camera
    - **Resolution:** Options> Test Resolution   
      How detailed the image will be. Larger the resolution=slower it will be.
    - Other tools in render
* Set the Cone Angle to **20**, the Penumbra Angle to **25**, and the Dropoff to **0.25**. This will give a nice, soft edge to the Spotlight.  
    
   **Cone Angle**-The size of the light’s cone angle. The higher the number, larger the cone angle size will be.   
    
   **Penumbra Angle-** The softness and hardness of the light fall. It is part of the shadow where light makes it past whatever is casting the shadow. Higher the Penumbra angle, the softer the edge will be for the spotlight.  
    
   **Dropoff-** The rate of which light degrades as it moves through space.
* Render Image
* **Attribute Editor**.   
  + Under **Shadows** scroll down to **Raytrace Shadow** **Attributes**.
    - Check **Use Ray Trace Shadows**
    - Change the **Light Radius** to 2, **Shadow Rays** to 50, and **Ray Depth Limit** to 1.
    - **Raytrace Shadows**: Creates shadows by taking into account the distance from the light and the size of the light. When a large light gets closer to an object, the shadow becomes softer.   
      **Light Radius** : The light radius affects the softness of the shadow. Higher the number for the light radius, the softer the shadow will be. Will be grainy if you don’t increase shadow rays.  
        
      **Shadow Rays**: Increasing the shadow rays increase the quality of shadow, but will slow down render time.  
        
      **Ray Depth Limit**: Sets the ray depth limit.
* **Creating Fill Light**
  + **Fill light-** Used to fill in shadows, is a lower intensity than key. Doesn’t create shadows. Can lower light intensity in the real world by moving light back, using reflectors or light diffusers.
  + **Create second spot light.** 
    - Rename in outliner.
    - Place the fill light at **(x,y,z)=(-19,17,20).**
    - Select panels and use **Look through Camera** to point light at the pawn.
    - **Intensity** to 1.25, the **Cone Angle** to 20, the **Penumbra Angle** to 70, the **Dropoff** to 1.25, and the **Color** (H,S,V) to (240, 0.388, 0.721).
      * H=Hue
      * S=Saturation
      * V=Value
    - Uncheck the **emit specular** box.
      * Only the key light casts specular highlights on the front of the pawn.
      * Turn off shadow in Raytrace shadow Attributes by unchecking use ray trace shadows
* **Creating Rim Light**
  + **Rim Light-** 
    - The rim light provides definition to the silhouette of your subject and helps separate it from the background
    - Create another spotlight
    - Name it “pawn\_rim”
    - position **(x,y,z)=(-4, 14, -25)**
    - **Intensity** to 1.8 and the **Color (H,S,V) to (60, 0.366, 1)**.
  + **Harsh cone of light on ground.**
    - Disconnect light from ground.
      * Select light + Background
      * Go to lighting/shading
        + Select break light link
* Render out image when done.