

Desk Lamp Design

ISDN 1006
Human-centered Innovation

PORTFOLIO



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ILLUMINANT

RESEARCH

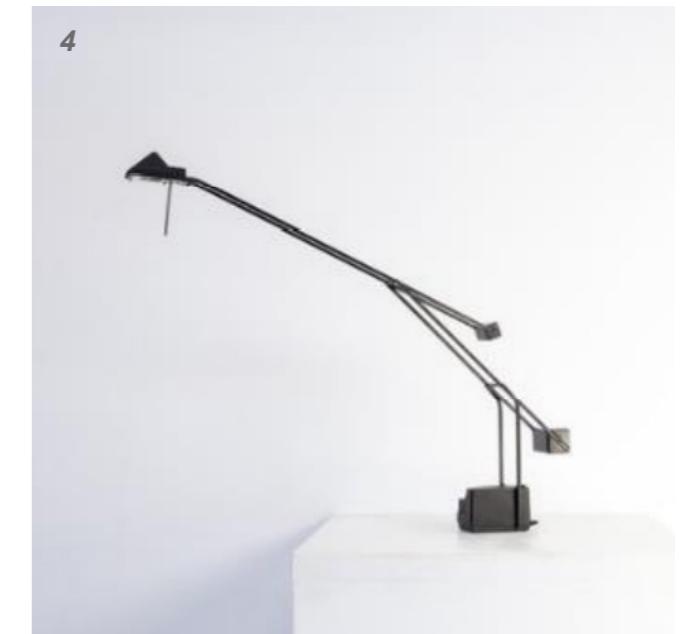
1 Dyson lightcycle desk lamp used LED light for illumination



ILLUMINANT

RESEARCH

3 Estella Fluorescent Task Desk Lamp



LED

The special feature of this lamp is it can move and rotate in 3 planes.

The simple design is decent for room decoration.

The use of LED makes the product more expensive but energy-efficient and environmental-friendly.

INCANDESCENT

The cylindrical glass cover around the bulb makes the design of this lamp attractive.

Various types of bulbs are compatible to this lamp but the Edison bulb is suggested for a classical look.

Incandescent bulbs require time to warm up and increase brightness, so it is less energy-efficient.

CFL

As fluorescent light bulbs are usually in rod shape, rectangular head is common. The metal arms are used to adjust the position of the light source.

CFL contains poisonous mercury. Heavy metal contaminates the environment, so it is not recommended.

HALOGEN

This lamp has a counterbalance feature with the parallel rods as balance.

Halogen lamp requires greater power input to operate with higher watts.

REFLECTION

ON ONE CHOSEN DESK LAMP

Midgard Scissor Lamp by Curt Fischer for Industriewerke Auma, 1920s



The assembly of the components

The components including metallic hinges, screws, lamp head cover, cables embedded and the light bulb. This type of lamp is called "Scissor Lamp", "Arc" or "Adjustable Wall-Arm Lamp."

To create the scissor shape, a planar hinge is designed at the midpoint of the long shaft sealed with screws to enable the movement. This link below shows how this type of lamp is assembled.

Industrial semi-finished products and materials chosen

The materials used are mainly metal, plastic and enamel. The metal casts the body of the whole lamp while plastic is used as the electrical insulator and a small portion of it composes of enamel.

REFLECTION

ON ONE CHOSEN DESK LAMP

The joint details of Midgard scissor lamp



The joints and mechanics, kinematics

The joints are connected by screws. The lamp has 8 joints in total to enable lamp movement. However, the body joint movements are in one plane (horizontal plane) and only the head of the lamp could move in another plane (vertical plane).

When we apply force to pull the rod attaching the lamp head, the scissor is extended and the whole lamp moves to an area further from the axis attaching the lamp to the wall, and vice versa.

BAUHAUS DOCUMENTARY

REFLECTION

Bauhaus Dessau Foundation



First episode - The Code

For the first video, the title of this part is “The Code”. This documentary introduces how the Bauhaus idea endured and spread to different parts of the world. The Germany Bauhaus school was forced to close after 1933 but their spirit of intuitive teaching of arts and craftsmanship continues. The Bauhaus idea also influenced lamp, furniture, architecture and fashion design.

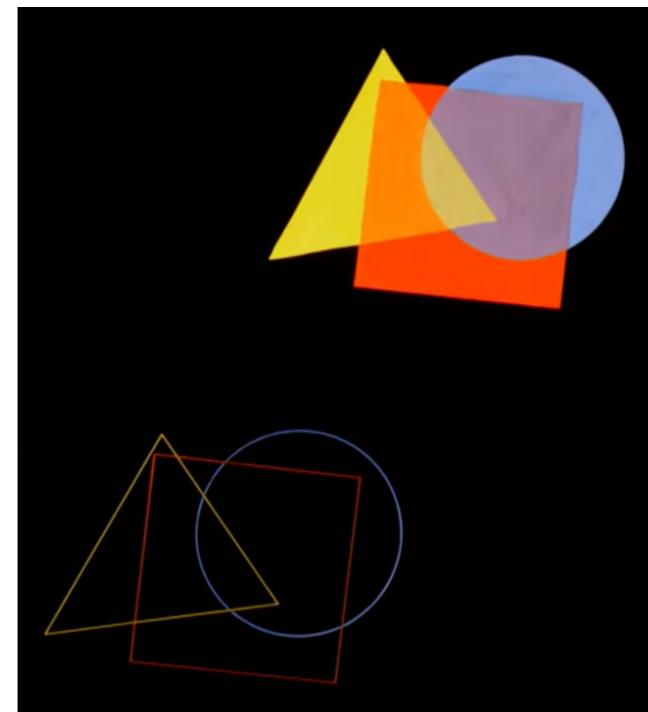
Second episode - The Effect

For the second video, the theme is “The Effect”. The documentary introduces a large company, IKEA, as it follows a concept of democratic design similar with Bauhaus. They emphasize “form follows function”, which is realized via good quality, intended use, sustainability, and low price, to attract customers. This video then introduces various architecture, dances, music, household devices, and even the famous iPhone to demonstrate the worldwide incorporation of the Bauhaus effect.

BAUHAUS DOCUMENTARY

REFLECTION

Trademark of Bauhaus: [circle, triangle and square], [red, blue and yellow]



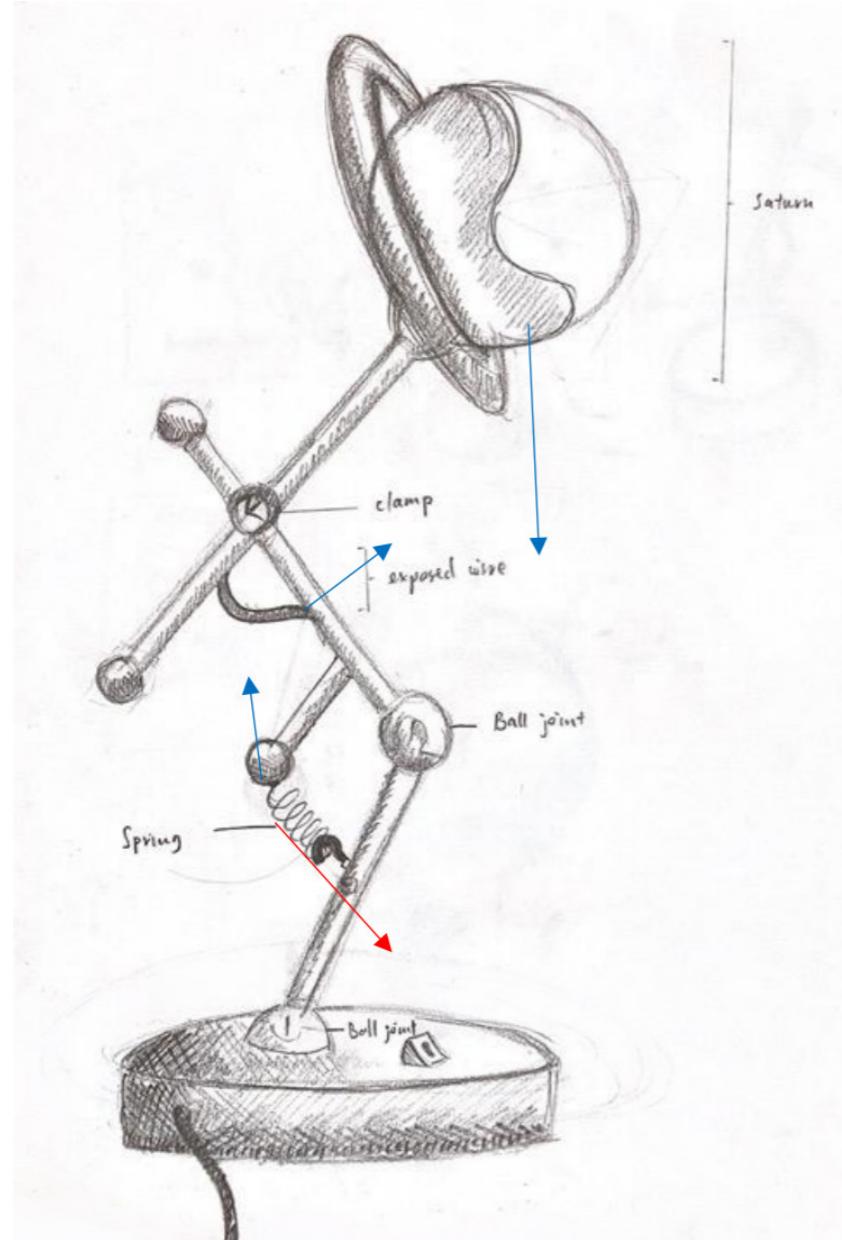
Third episode - The Utopia

For the third video, the theme is “The Utopia”. This video continues elaborating on the Bauhaus effect’s influence on the complex society. For example, designers improve people’s lives by building outdoor escalators, so that the residents need not climb by foot. This again realizes the Bauhaus effect by observing people’s needs to yield useful designs for everyday objects.

IDEATION OF DESIGN

SKETCH

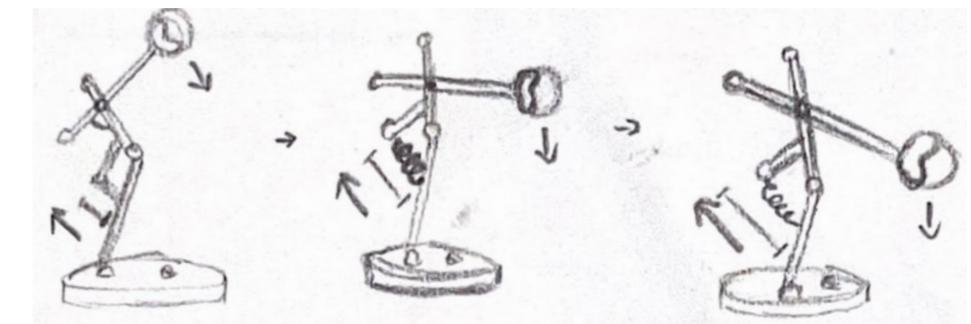
INSPIRATION | DESIGN AND MECHANISM | PREVIOUS SKETCHES



Inspiration

Inspired from ISDN1004 Sketching, spherical and circular shapes and structures are more human-centered as the human body reminds us of a curved line. Therefore, I would like to use spherical objects to make a desk lamp which is human-centered.

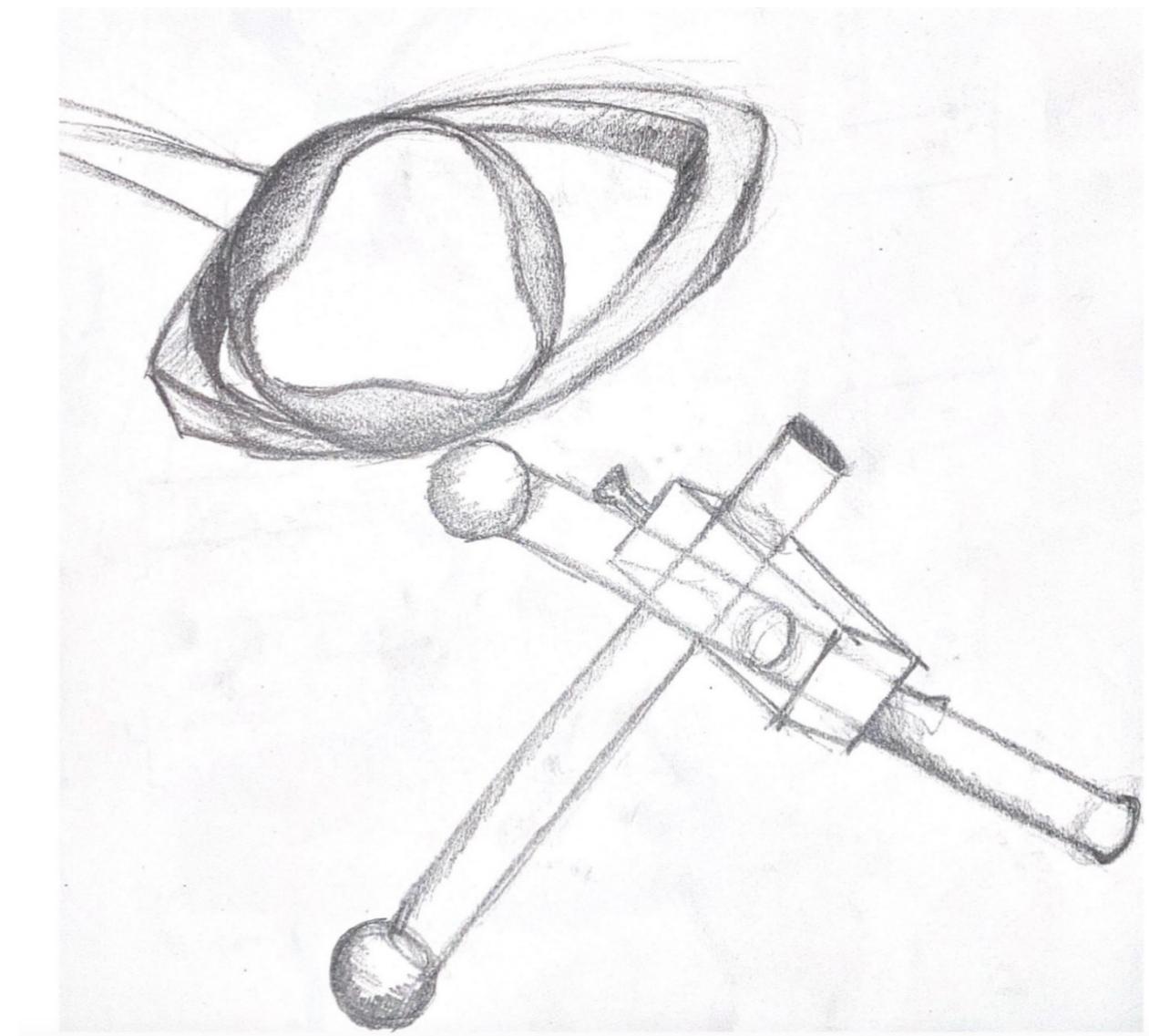
The middle-sized spheres are used as joints, small spheres are for decorations and the largest sphere represents the lamp head. As the combination of spheres makes me think of celestials, I decided to model the lamp after the planet Saturn.



Mechanism

The extended rod with a spring is used to support the upper rod as the lamp head is quite heavy for the upper rod. Thus, the spring is used to pull the rod to prevent the head from collapsing.

As the lamp head could move, users could control the gravity center using the clamp, while the light direction can also be freely adjusted. I am going to apply a strong spring which has enough strength to pull the lamp head as well.





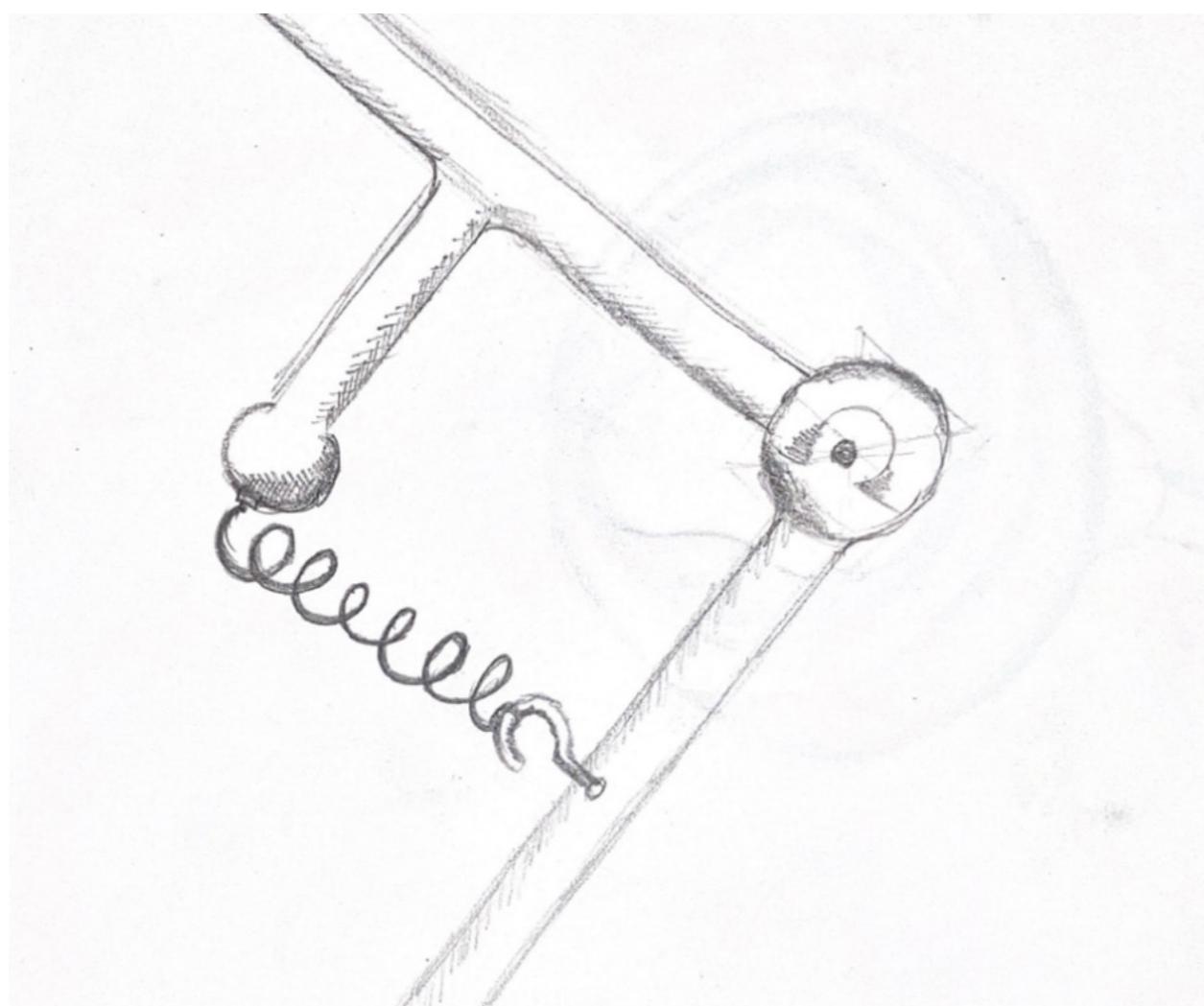
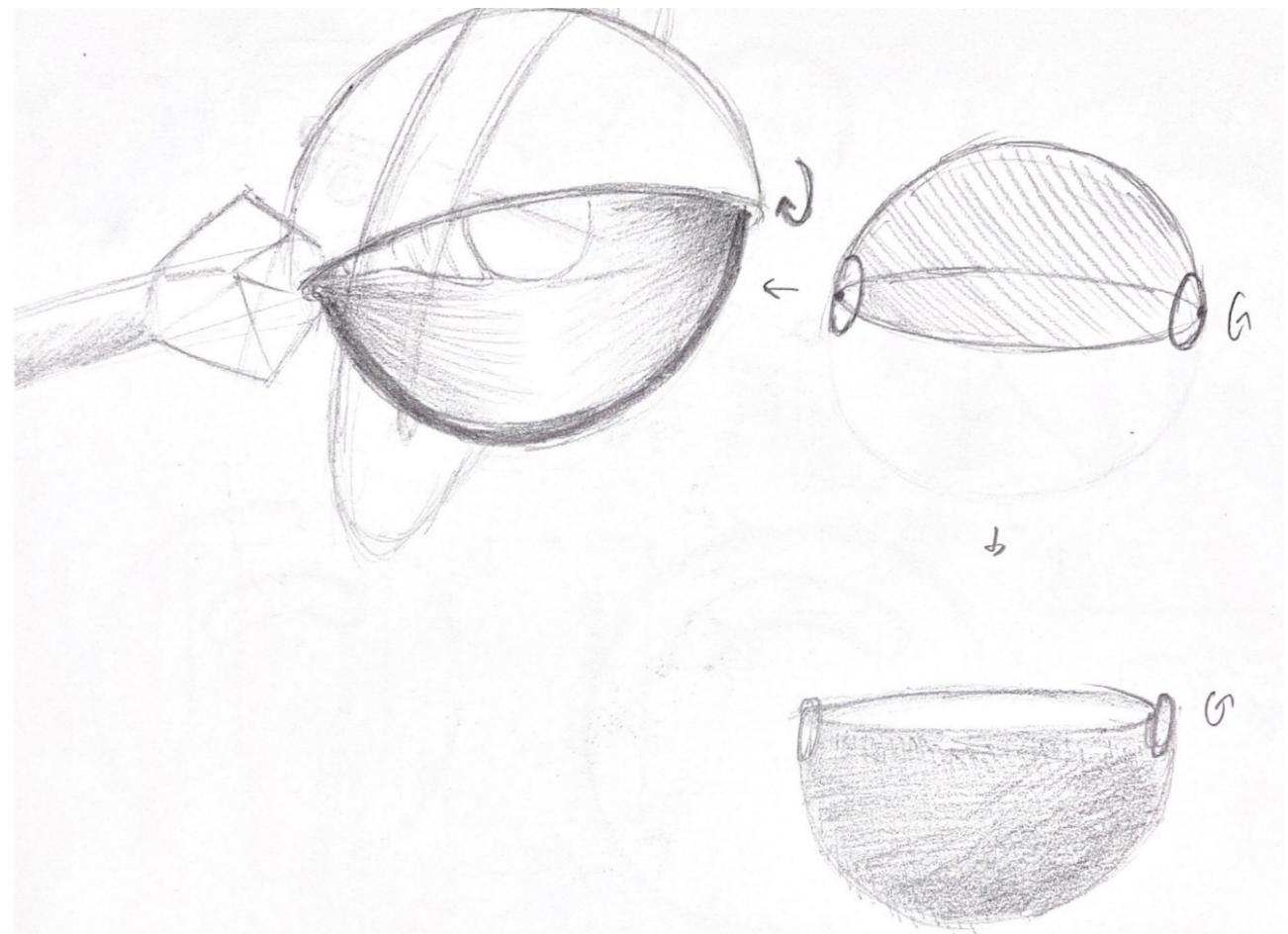
Eclisse designed by Vico Magistretti in 1967



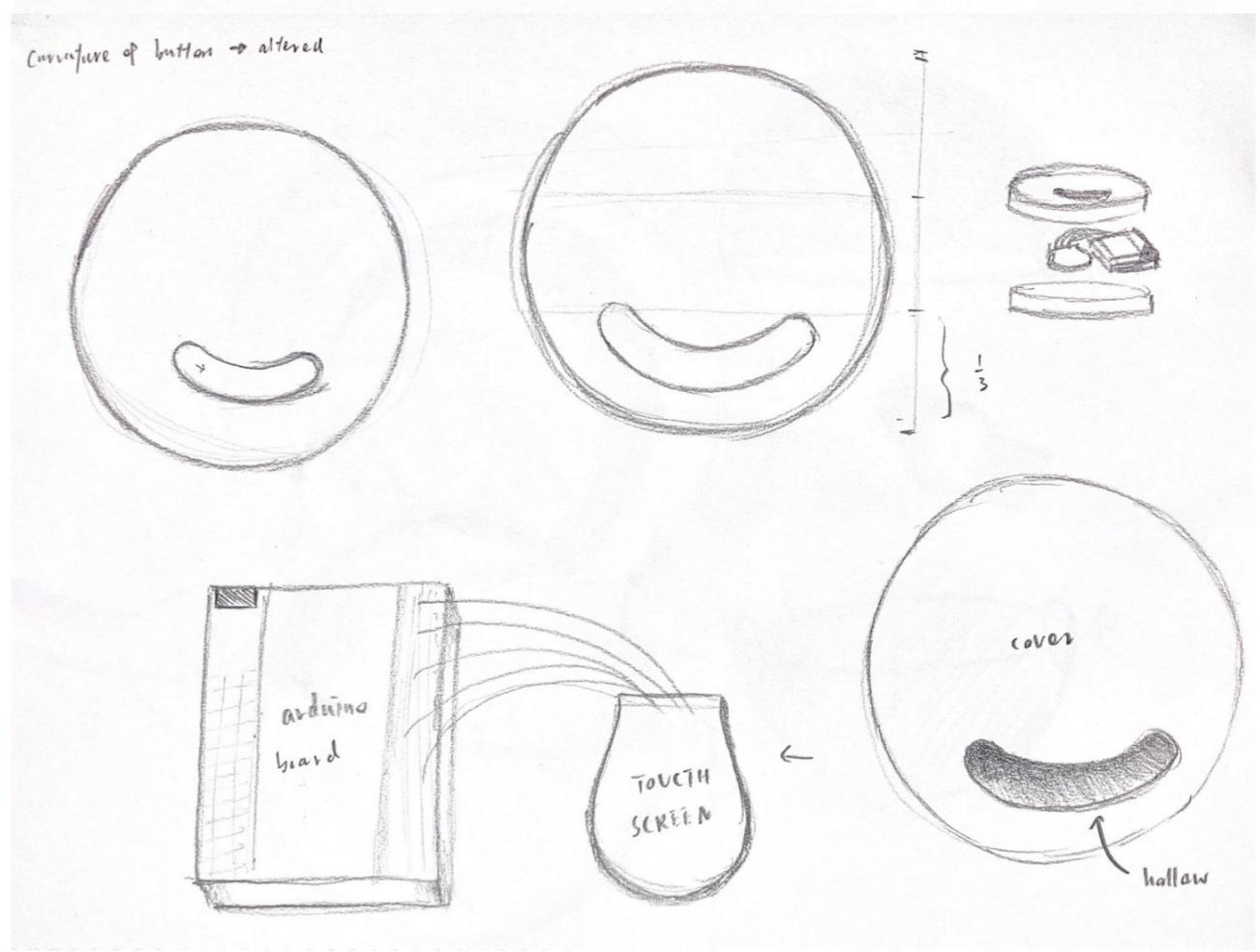
Ballfinger lamp with 360deg ball joint.



Midgard. SPRING BALANCED TABLE LAMP

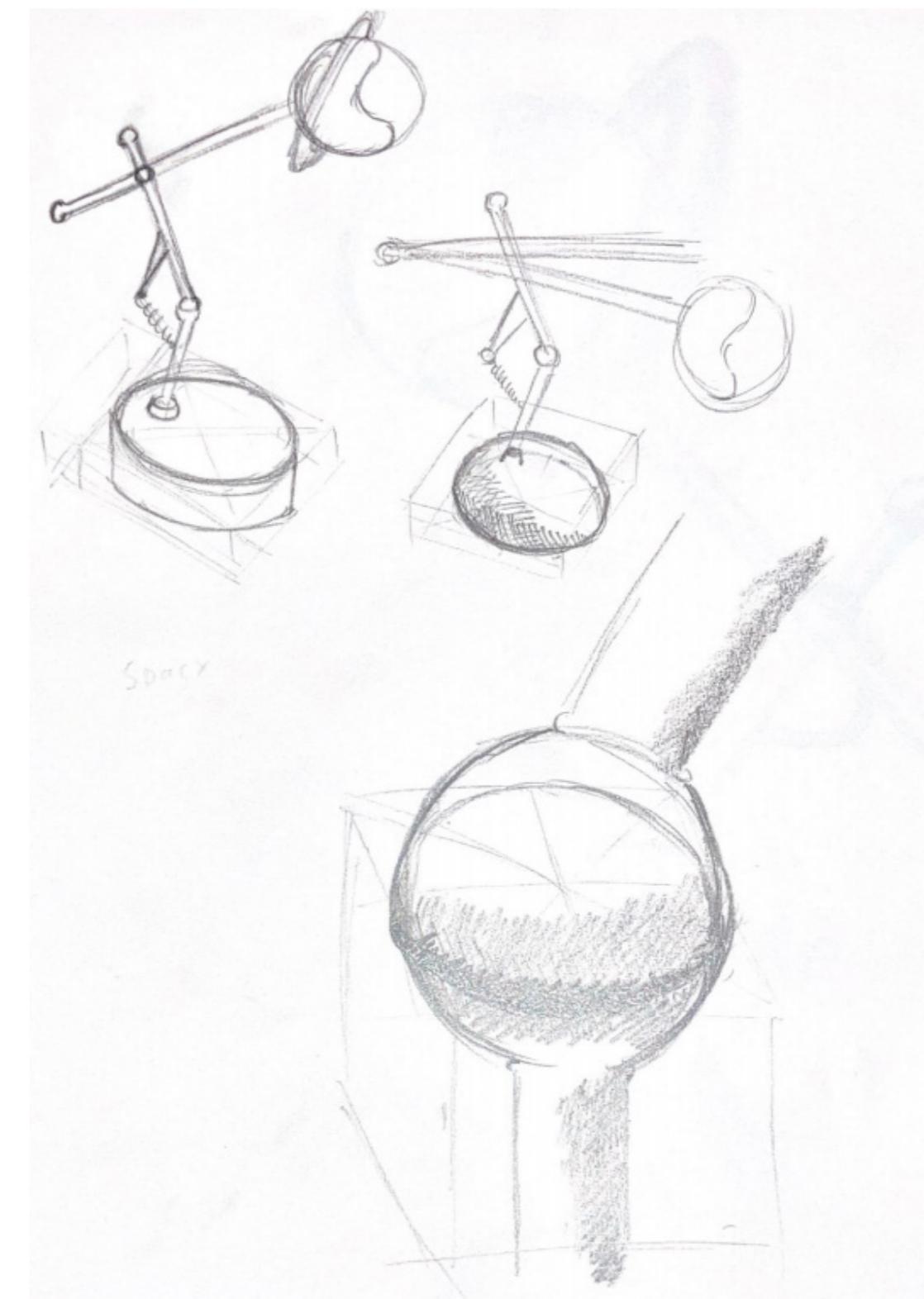
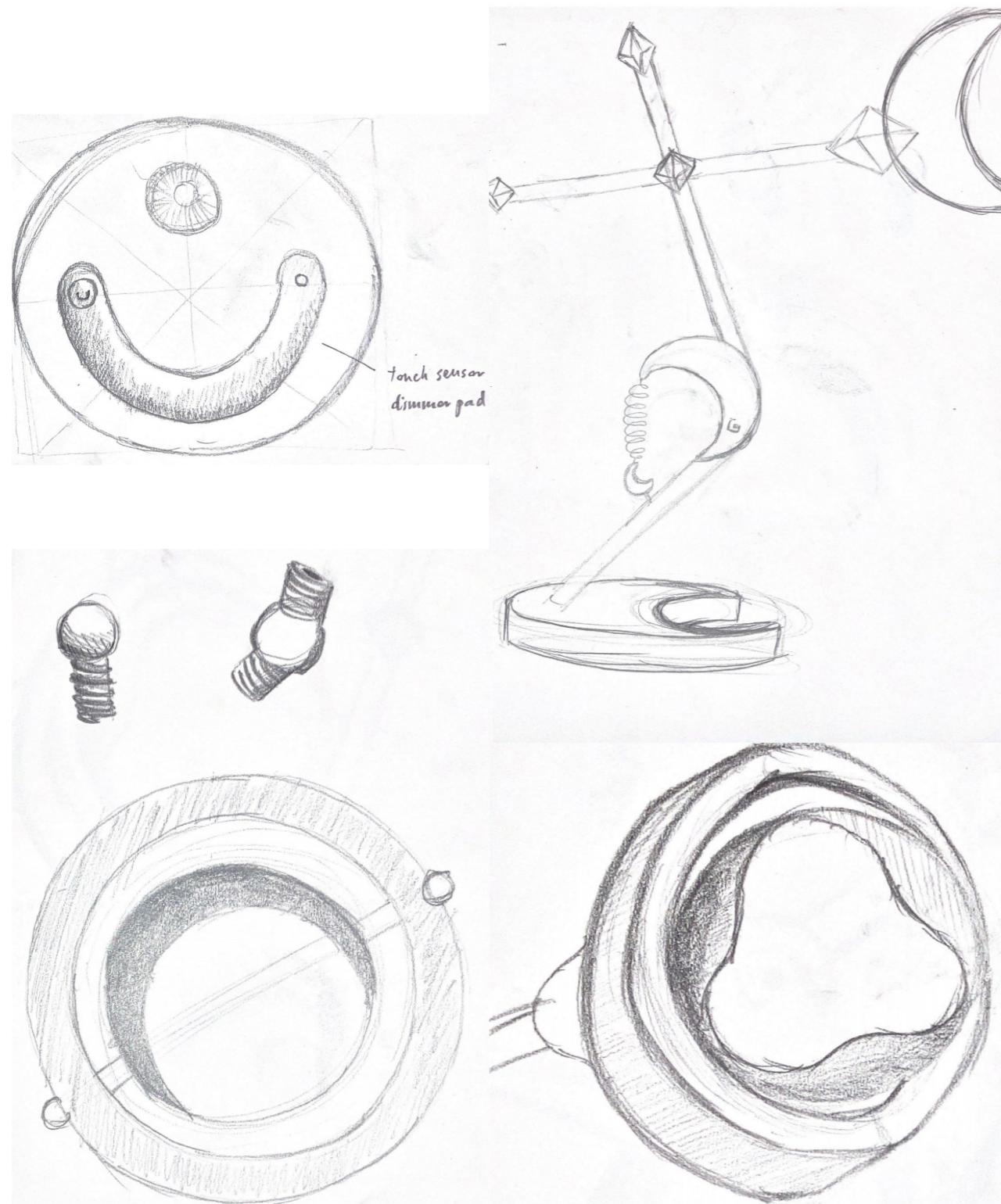


Kelly Lai ISDN 1006



Kelly Lai ISDN 1006

Previous Sketches



COMPONENTS AVAILABLE

ELECTRONICS

ARDUINO LCD TOUCH SCREEN



ARDUINO

As a touch pad is needed to adjust the brightness of the light bulb, it is used for display and detecting sensations of touch. The relay module is also considered for converting voltage from the Arduino board to the LED bulb. The Arduino board is charged via a USB wire and is installed at the bottom of the lamp. An encoder is used to adjust the ring movement, simulating a lunar eclipse by rotating the ring.

LIGHT BULBS AND CABLES

The LED bulb is E27 220V and dimmable. An LED bulb holder with USB head is used as USB head is more convenient than using a plug. The USB head could be connected to computers, portable chargers or phone plugs.

COMPONENTS AVAILABLE

ELECTRONICS

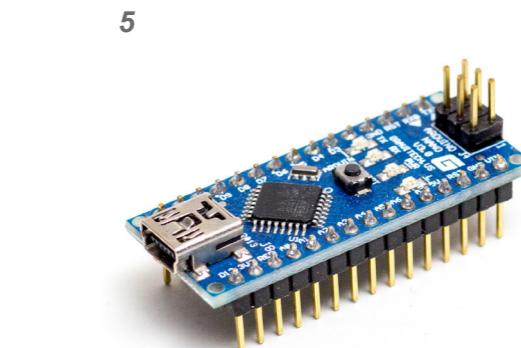
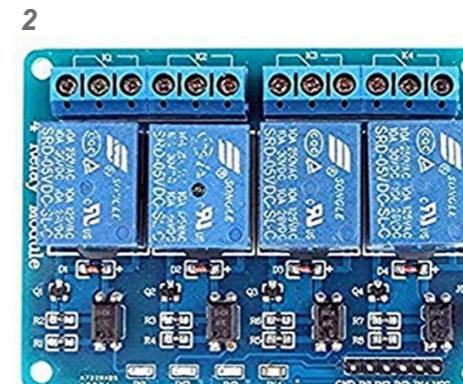
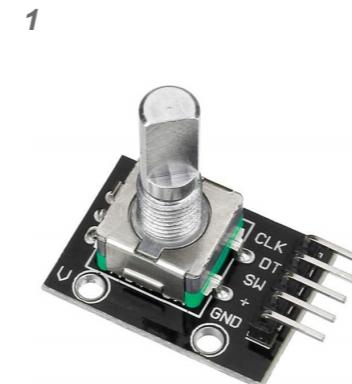
1 Arduino Encoder

2 ELEGOO Relay Module 4 Channel DC 5V

3 Light Bulb Holder

4 LED E27 806 bulb

5 Arduino Nano



COMPONENTS AVAILABLE

LAMP JOINTS AND BODY

1 1/8IPS FEMALE X 1/8IPS
FEMALE THREADED
POLISHED COPPER FINISH
ADJUSTABLE FRICTION
SWIVEL

2 10IN LONG X 1/8IPS (3/8IN
OD) MALE THREADED
POLISHED COPPER FINISH
STEEL PIPEPIPE



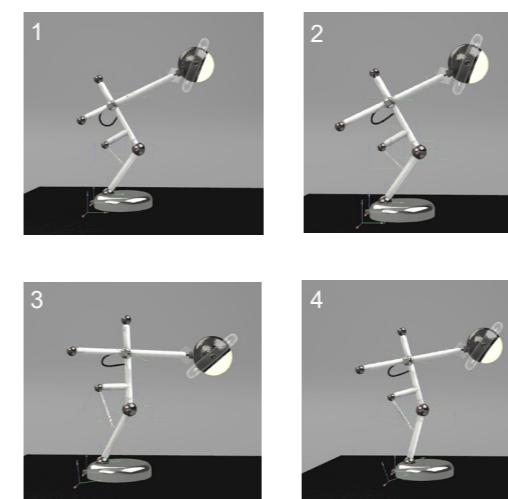
CONNECTIVE JOINTS

The ball-shaped joints that allow one-plane movement and polished copper-coated rods could be bought online for assembly.

CAD DESIGN

FIRST DESIGN

DESIGN FEATURES | POINT OF VIEWS | IMPROVEMENTS



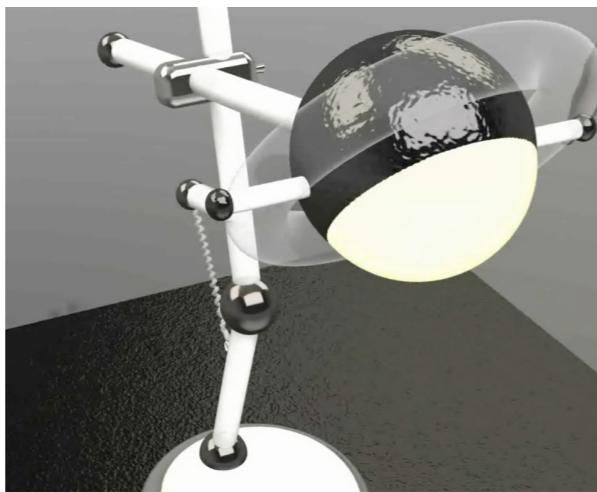
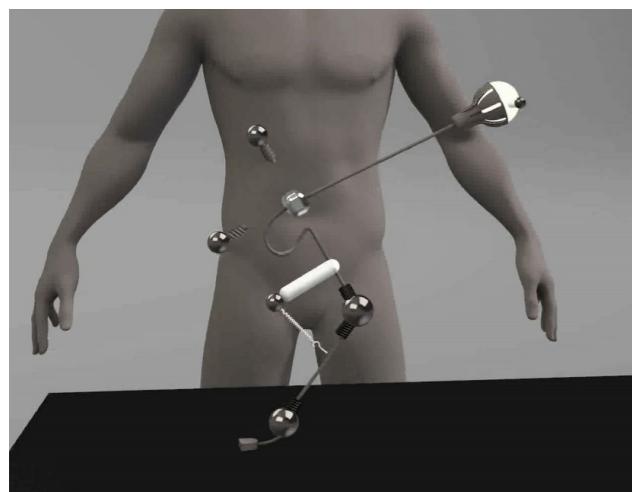
Design features

The first CAD design was designed and rendered in Rhino. Simple colours like black and white were used. A human figure was added to show the dimensions of the lamp. The previous lamp was designed with a thick circular structure on the lamp head with two-rods clamp joints. Also, the wire was exposed.

The 4 photos on the left show the mechanism of the movement of the joints. 1 and 2 shows the horizontal clamp joint movement while 3 and 4 shows ball joint movement.

CAD DESIGN

Point of Views (exterior and interior)



Improvements

The first design was made to show the mechanism of the lamp movement for easy understanding. The previous lamp design lacks color variation, so the lamp looks less vivid. Also, the joints and rods are quite clumsy. Besides, the base of the lamp looks a bit old-fashioned which does not fit with the overall tone. These improvements are taken into account and the second design is made.

SECOND DESIGN

DESIGN MODIFICATION AND ELECTRONICS | FEATURES | COMPONENTS | RENDERING



Design modification and electronics

The design of some of the joints are modified. For example, a semi-circle shaped joint is created between the horizontal rod and the vertical rod. Also, a strong joint with high friction is used instead of a clamp to prevent the heavy lamp head from dropping. Besides, a hollow torus-shaped circular structure which allows users to adjust the lamp ring is used to connect to the lamp head.

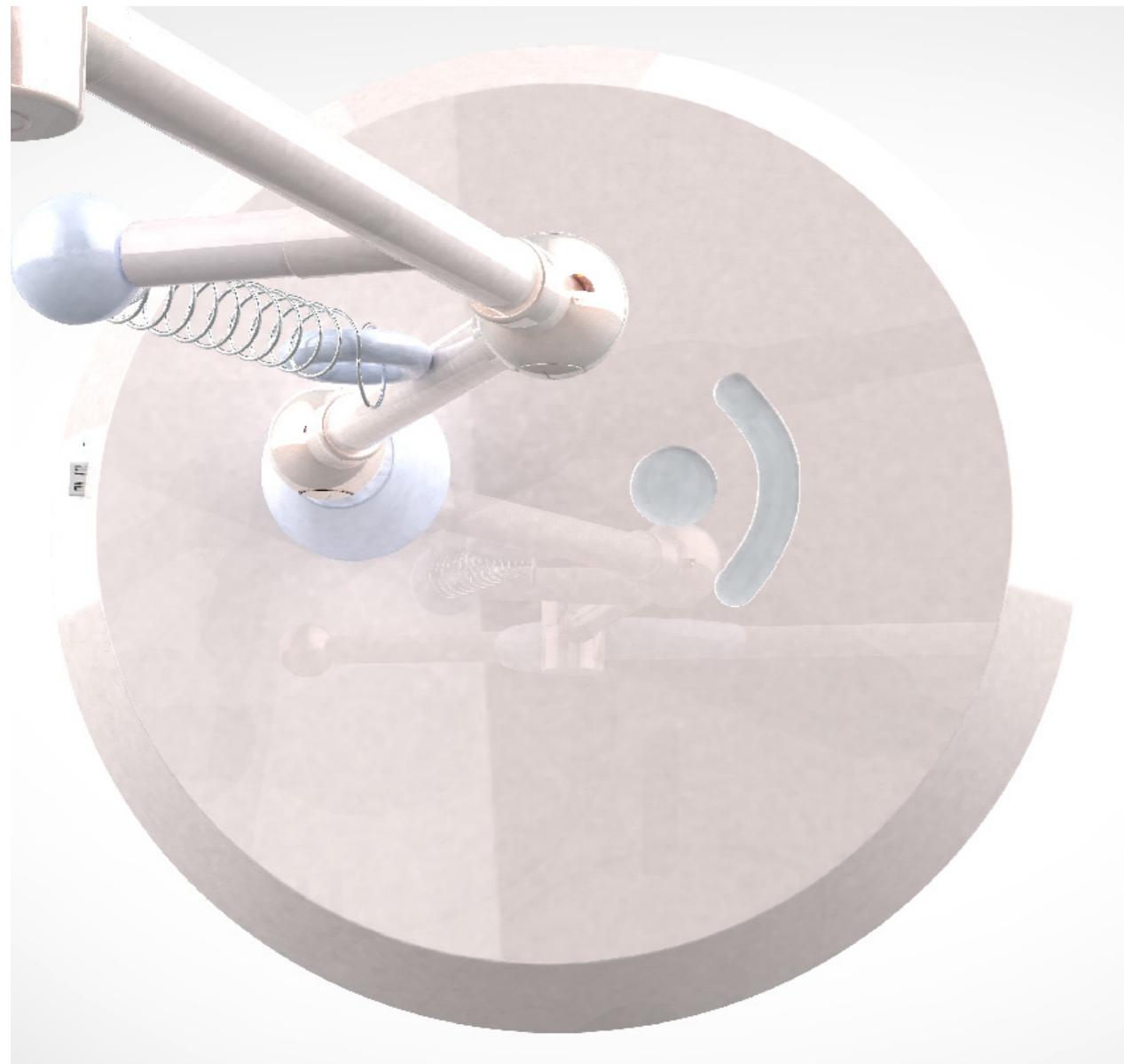
The electronic components, including a touch screen, four port relays, an encoder, and a Bluetooth controller, would be added to enable functions of the lamp.



Features

The ring-shaped circular structure on the lamp head is connected with the encoder which could adjust the brightness of the lamp.

The bottom of the lamp has a touch screen feature where the circle shows the shape of a moon while the curve allows users to adjust the brightness.



Components

The photo below shows the separated components of all the parts of the lamp.



CEVEN CREAM

Rendering colors

Different rendering colors and materials of the lamp are shown. The lamp on the left is called "Ceven Cream". A relatively white lamp body color is used to render the lamp. A multi-color layer of cold color tone is applied to make the lamp more classy.

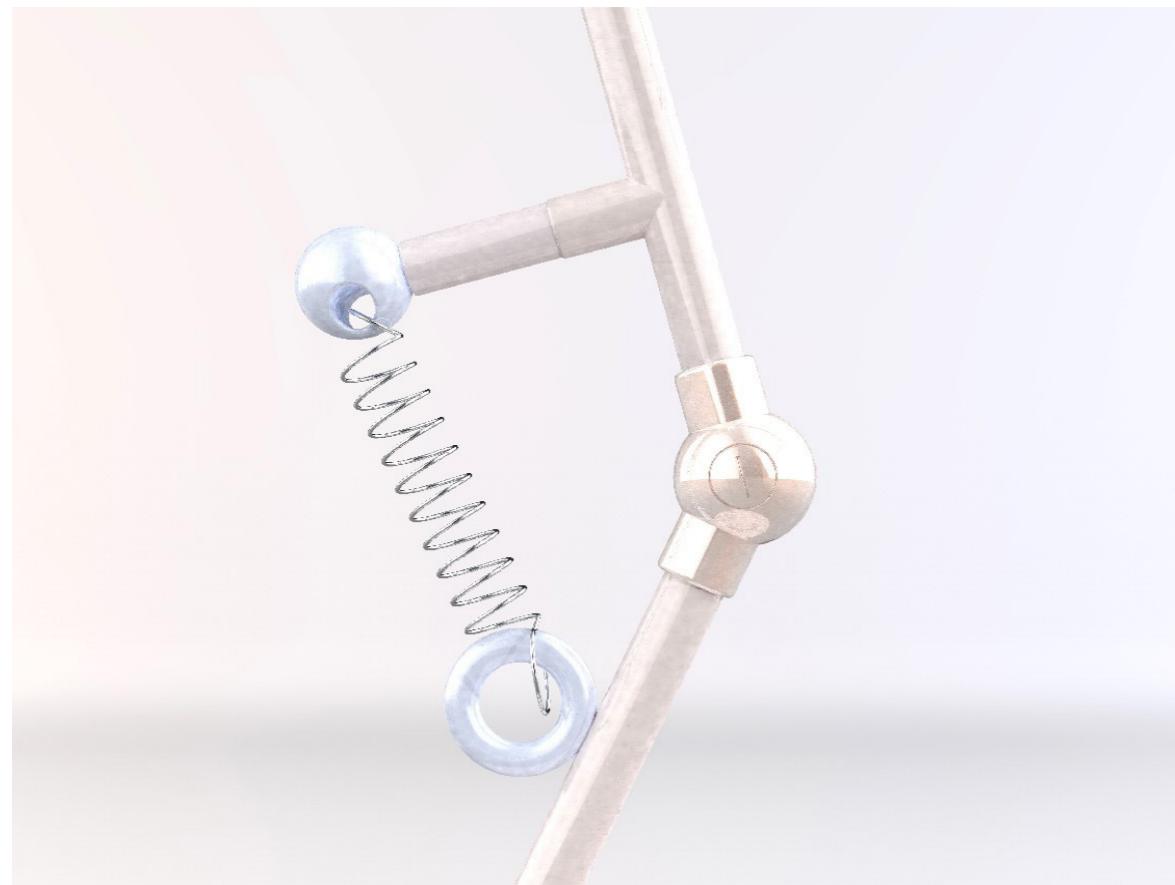


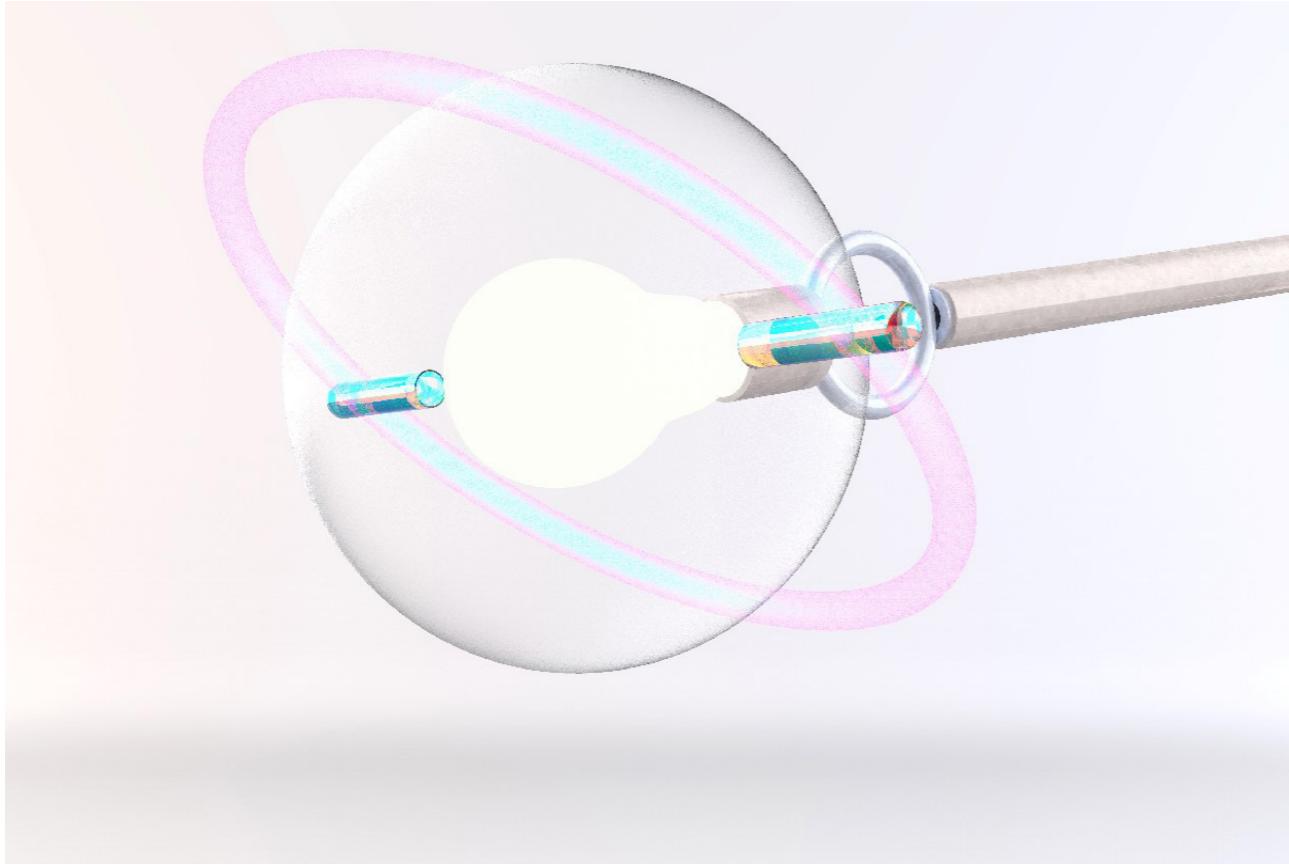
CEVEN PEARL

The lamp on the right is called "Ceven Pearl". Lamp body colors with warmer tones are used to render the lamp. A multi-colored layer of pink-turquoise is applied to create a pearl pink lamp.



Rendering details

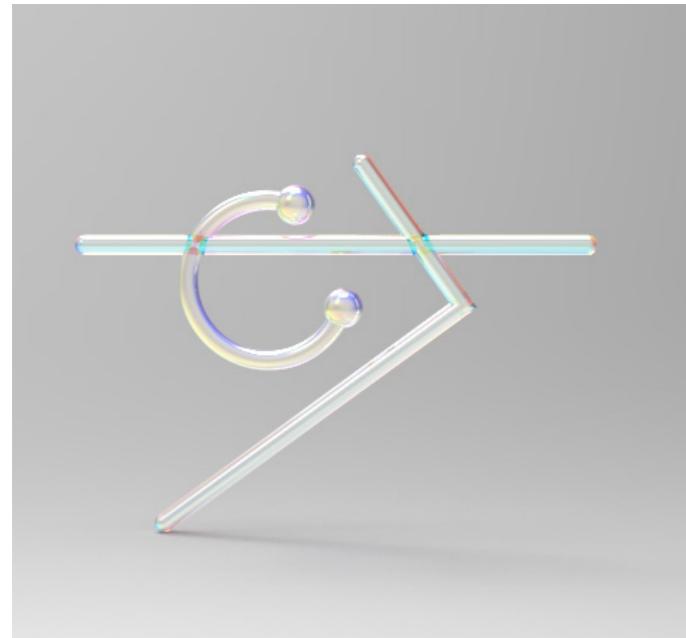






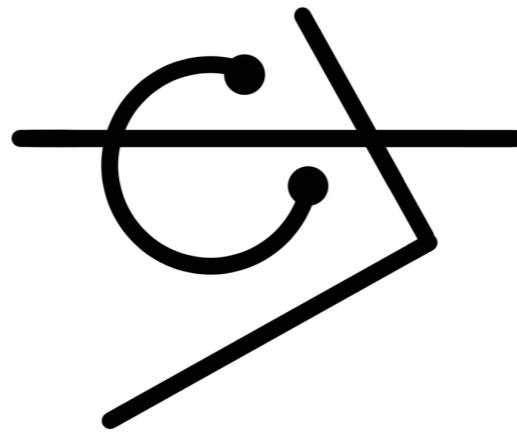
LOGO DESIGN

CEVEN



1 3D Ceven logo

2 2D Ceven logo



IDEATION

The logo is created based on the shape of my lamp. There are straight rods, angles, semi-circle and spheres in my design. All these elements combine into a logo. For the naming of the logo, there is the letter C and the number 7, and I combined them to form the brand Ceven.

LIST OF MATERIALS

JOINTS AND ELECTRONICS

Item	Amount	Cost (HKD)
Led bulb e27 806 lumen, wireless dimmable warm white/globe opal white	1	\$79.9
Arduino Encoder	1	\$27
ELEGOO Relay Module 4 Channel DC 5V	1	\$71
Light Bulb Holder	1	\$125
Arduino Nano	1	\$151.7
1/8IPS FEMALE X 1/8IPS FEMALE THREADED POLISHED COPPER FINISH ADJUSTABLE FRICTION SWIVEL	5	\$30
10IN LONG X 1/8IPS (3/8IN OD) MALE THREADED POLISHED COPPER FINISH STEEL PIPEPIPE	5	\$25

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