

The Music Box: Modelling.

TEAM MEMBERS :-

- 1) Manoj Middepogu (160050075)
- 2) Sai Teja Talluri (160050098)

Brief Description :

- We have made 3 models → Humanoid, Box and Robot
- We have written a function `change_cons()` which enables us to set constraints on rotation about x,y,z axis and we used it to make sure of DOF (degrees of freedom). With the help of the above function we tried to make humanoid resemble human by **not allowing** face,knee,elbow,etc to rotate with any angle without bounds and similarly with top lid of box and other parts.
- We gave all permissions to Robot as we can't expect it to be according to fixed conventions and it has > 5 DOF.

Centroids of each model :-

- Humanoid - node1 - key 1
- Box - bnode1 - key B
- Robot - cnode1 - key F1

Keyboard Controls for the Humanoid Model :

- Key 1 ---> Torso2 (Node 1)
- Key 2 ---> Neck (Node 4)
- Key 3 ---> ShoulderL (Node 6)
- Key 4 ---> ShoulderR (Node 7)
- Key 5 ---> ElbowL (Node 10)
- Key 6 ---> ElbowR (Node 11)
- Key 7 ---> HipL (Node 15)
- Key 8 ---> HipR (Node 16)
- Key 9 ---> LKnee (Node 19)
- Key 0 ---> RKnee (Node 20)
- Key MINUS ---> Head (Node 5)
- Key EQUAL ---> Torso3 & Torso2 (Node 14 & Node 1)
- Key Z ---> WristR (Hnode 1)
- Key X ---> WristL (Hnode 6)
- Key C ---> AnkleR (Node 23)
- Key V ---> AnkleL (Node 24)

Keyboard Controls for the Box Model :

- Key B ----> Box (BNode 1)
- Key O ----> Top Lid (BNode 5)

Keyboard Controls for the Robot Model :

- Key F1 ----> Torso2 (CNode 1)
- Key F2 ----> HipL (CNode 2)
- Key F3 ----> HipR (CNode 3)
- Key F4 ----> KneeL (CNode 18)
- Key F5 ----> KneeR (CNode 19)
- Key F6 ----> UArmL (CNode 23)
- Key F7 ----> UArmR (CNode 24)
- Key F8 ----> ElbowL (CNode 25)
- Key F9 ----> ElbowR (CNode 26)
- Key F10 ----> LArmL (CNode 29)
- Key F11 ----> LArmR (CNode 30)
- Key F12 ----> WristL (CNode 31)
- Key INSERT ----> WristR (CNode 32)
- Key DELETE ----> Torso1(CNode 22)
- Key BACKSPACE ----> Neck (CNode 41)

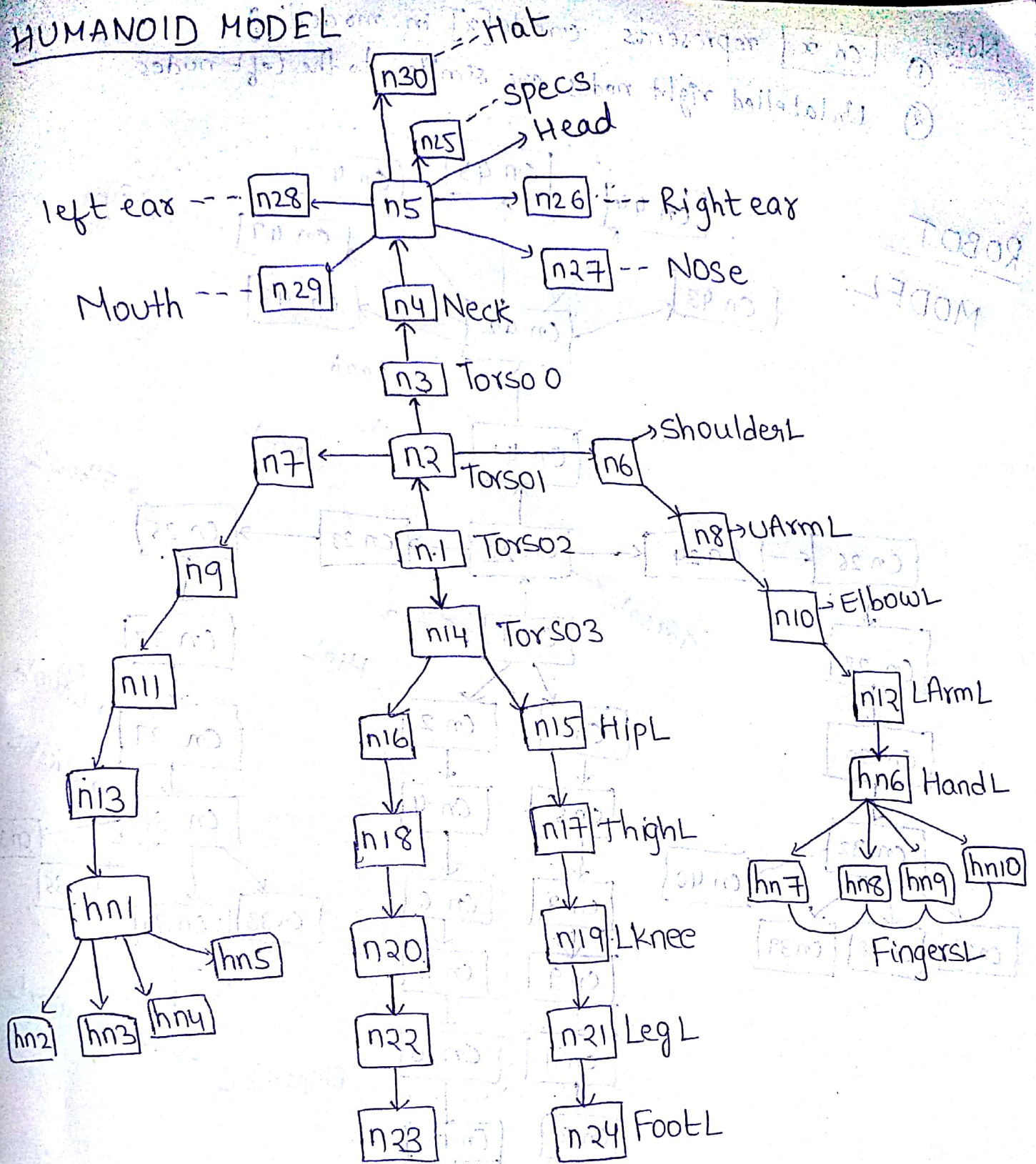
Keyboard Controls for the CENTROID of the Models :

- HUMANOID ----> Key 1 (Node 1)
- BOX ----> Key B (Bnode 5)
- ROBOT -----> Key F1 (Cnode 1)

Hierarchical models :

Find the hierarchical models for humanoid, box and robot in the next three pages.

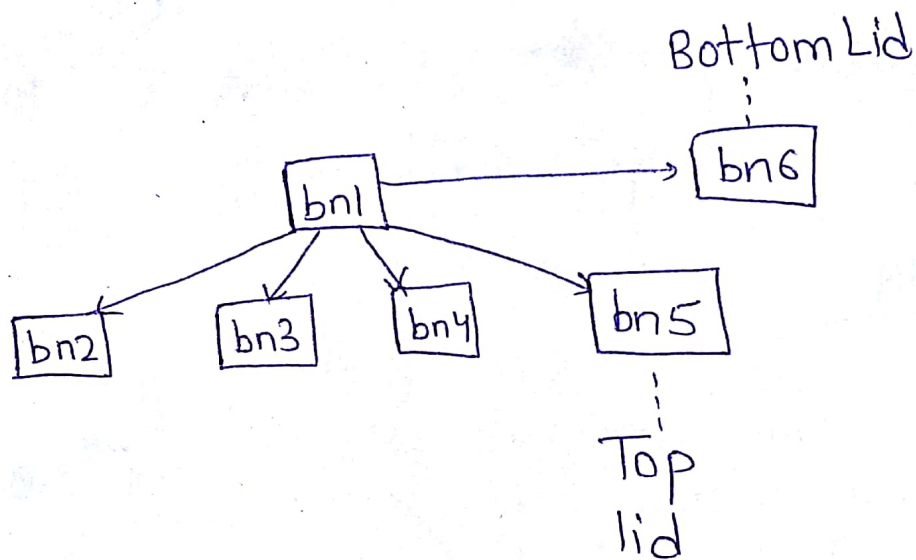
HUMANOID MODEL



Note:-

- The nx represents $node[x]$ in Modelling
- $hn x$ represents $hnode[x]$ in Modelling
- The Unlabelled right nodes are similar to the left ones.

BOX MODEL



Note:-

\boxed{bnx} represents box node $bnode[x]$ in modelling.

Note:

- ① $\boxed{cn\ x}$ represents $cnode[x]$ in modelling
- ② Unlabelled right nodes are similar to the left nodes.

ROBOT

MODEL:

