CHAPTER V

DISCUSSION

5.1 Testing of Robot Model

To make sure the robot is actually able to pick up objects on the target that has been determined it is necessary to test, testing is done by manually measuring the position of the cylinder. After the measurements will be compared with that shown on the display screen. Y position of the base of the cylinder is 20, if added to the height of the cylinder is 10 then the y position of the cylinder is 30. Y position of cylinder on the display is 32, this is because it provides a space so that the end effector of the robot does not enter into the cylinder. To determine the performance of a model, the model will be tested. Testing the model in order to test whether the robot can move according to the procedure. Testing models of the robot is done manually, by pressing keys 0-9, O and P keys on the keyboard. The program code used to run a virtual robot arm, can be seen in Figure 5.1.

```
public void Check_JointRotation()
      {
      //waist joint
     (1)  if (input key(input key 1))
          {
             shoulderMesh.RotateY(1f, true);
          }
     (2)  if (input key(input key 2))
          {
             shoulderMesh.RotateY(-1f, true);
          }
```

```
//shoulder joint
    (3)  if (input key(input key 3))
        {
           upperArmMesh.RotateZ(1f, true);
        }
    (4)  if (input key(input key 4))
        {
           upperArmMesh.RotateZ(-1f, true);
        }
//elbow joint
    (5)  if (input key (input key 5))
        {
           foreArmMesh.RotateZ(1f, true);
        }
    (6)  if (input key(input key 6))
        {
           foreArmMesh.RotateZ(-1f, true):
  //roll arm
    (7)  if (input key (input key 7))
        {
           rollArmMesh.RotateY(1f, true);
        }
    (8)  if (input key(input key 8))
        {
           rollArmMesh.RotateY(-1f, true);
        }
  //pitch hand
    (9)  if (input key (input key 9))
        {
           pitchHandMesh.RotateZ(1f, true);
        }
    (10) if (input key (input key 0))
        {
           pitchHandMesh.RotateZ(-1f, true);
         }
   //roll hand
    (11) if (input key (input key P))
        {
           rollHandMesh.RotateY(1f, true);
        }
    (12) if (input key (input key O))
        {
           rollHandMesh.RotateY(-1f, true);
           }
        }
```

Figure 5.1 Testing of Robot Model Code

For an explanation of the first rule is if the 1 key on the keyboard is pressed then the waist joint will rotate in a clockwise direction. The second rule, if the 2 key on the keyboard

is pressed then the waist joint will rotate counter clockwise. The third rule, if the 3 key on the keyboard is pressed then the shoulder joint will rotate in a clockwise direction. The fourth rule, if the 4 key on the keyboard is pressed then the shoulder joint will rotate counter clockwise. The fifth rule, if the 5 key on the keyboard is pressed then the elbow joint will rotate in a clockwise direction. The sixth rule, if the 6 key on the keyboard is pressed then the elbow joint will rotate counter clockwise. Seventh rule, if the button is pressed the keyboard 7 what will roll arm rotates clockwise. Eighth rule, if the button is pressed on the keyboard 8 then roll arm will rotate counter clockwise. The ninth rule, if the button 9 on the keyboard is pressed the pitch of the hand will rotate in a clockwise direction. Tenth rule, if the 0 key on the keyboard is pressed the pitch of the hand will rotate counter clockwise. Eleventh rule, if the P button is pressed on the keyboard then roll the hand will rotate in a clockwise direction. Twelfth rule, if the O button on the keyboard is pressed then roll the hand will rotate counter clockwise.