Session 16

I started by looking for how I could correct my code for the rotating base, Mr Rothhut proposed to keep the same current approach, a function grouping all the forearm base angles and a first alternative would be to put the counterpart of all the Cartesian angles in spheric coordinate, the polar ones not working so well.

By setting x = ρ sin Φ cos θ y = ρ sin Φ sin θ z = ρ cos Φ

```
//calcul angle base with hpothenus
 int Rz = sqrt(z * z + x * x);
 Serial.println("Rz = ");
 Serial.println(Rz);
  //float angleB = asin(z / Rz);
 float angleB = atan2(y, x);
 Serial.print("  angleB = ");
 Serial.println(angleB);
```

The previous calculation has been replaced by the atan2 function.

We then find the angle theta =atan2(y,x),. Compared to the formula tested previously, this one allows a fluid movement, especially since the programming of fluid movements represents a real challenge.

On the other hand, the clamp had a lot of friction forces which made the g90 unable to open or close it, I thought of changing the servomotor at the very beginning I then looked for all those with the same dimensions as the G90 but with a higher torque, without success. I then unscrewed everything lubricated with silicone. now the clamp is controllable with a potentiometer quite well. (After 3-5 mechanical movements the gear degenerates and the 2 parts making up the gripper do not follow the movement).

The G90 does not support the 6V provided for the rest of the servomotors, it must be plugged in individually on the Breadbord.

The arm being now controllable by computer and Arduino, I started to learn about the creation of an interface under Inventor app to control it by an HC-05 module.