



ATOM-N 2020 - 10<sup>th</sup> EDITION



# 3D LED cube

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# General description

This project is based on a 3D LED cube with dimensions of 5x5x5. Besides the physical realization of the cube, a code has been developed with which all the letters of the alphabet can be displayed, also all the numbers and various 3D animations.

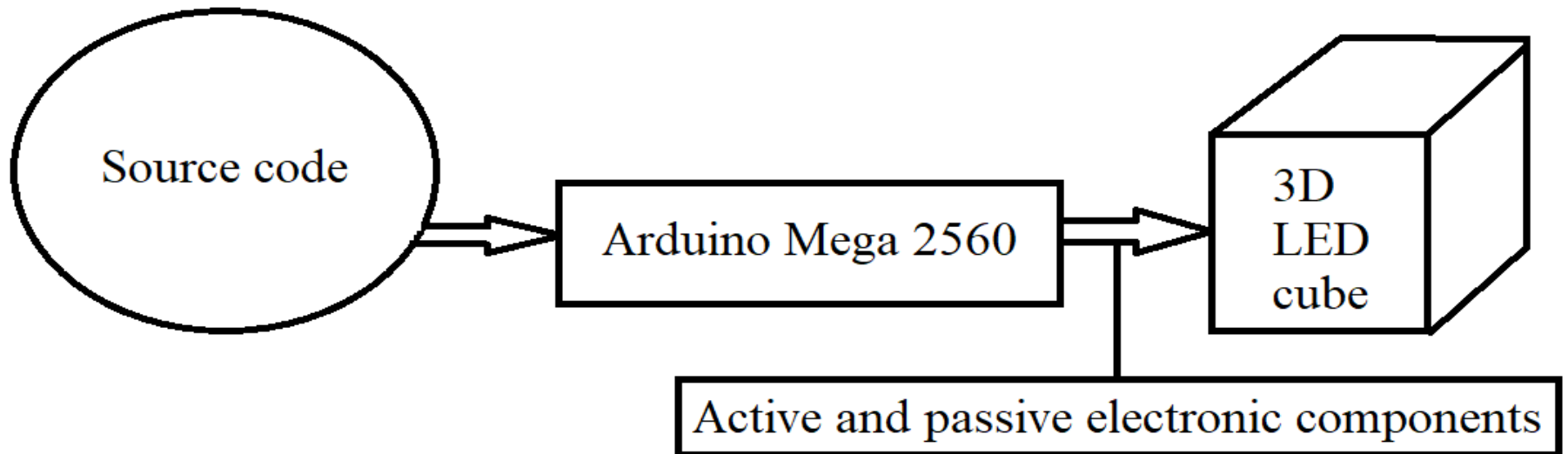
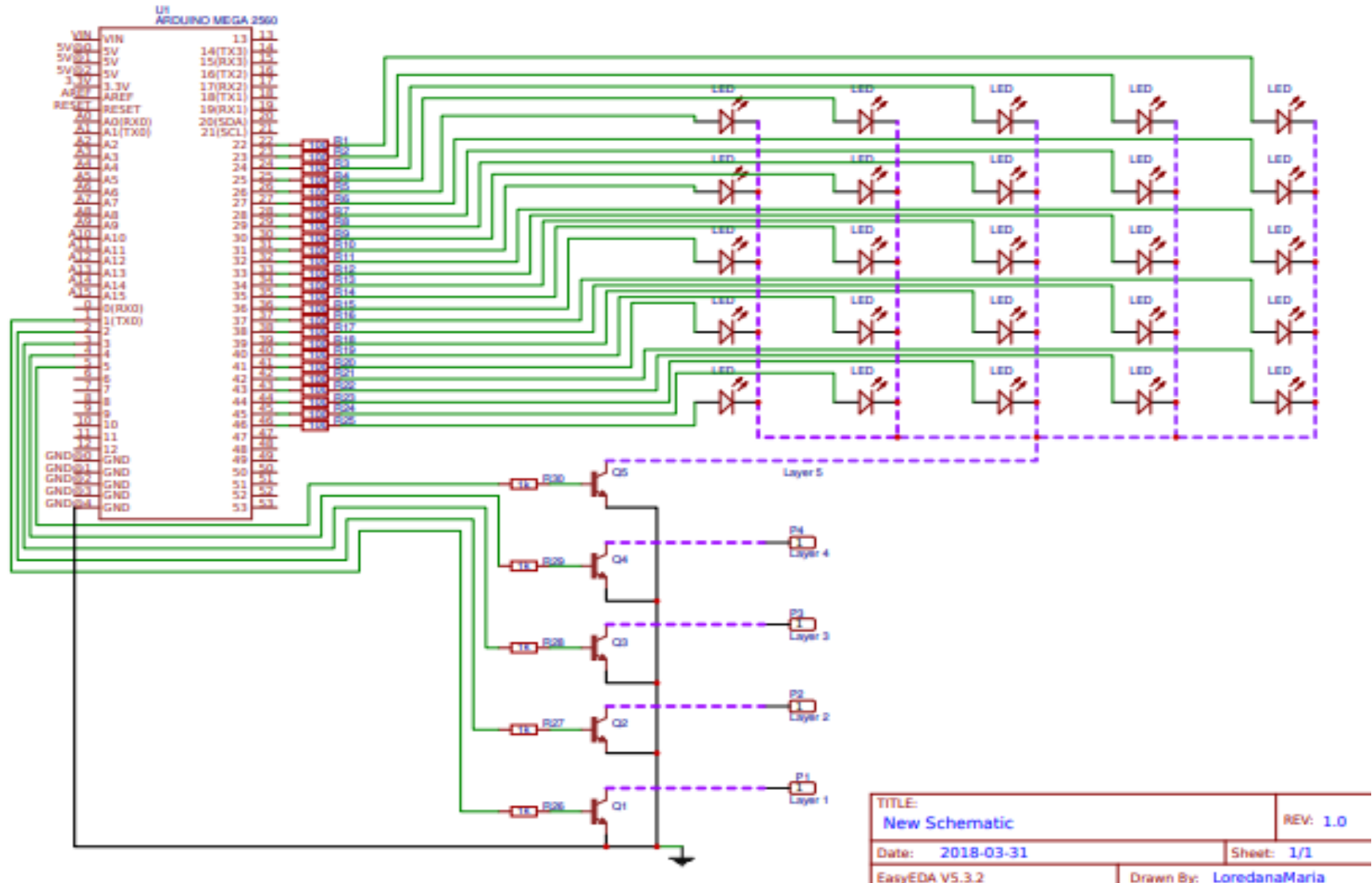


Figure 1. Block diagram

# Simplified electronic scheme



TITLE: New Schematic		REV: 1.0
Date: 2018-03-31	Sheet: 1/1	
EasyEDA V5.3.2	Drawn By: LoredanaMaria	

# Hardware implementation

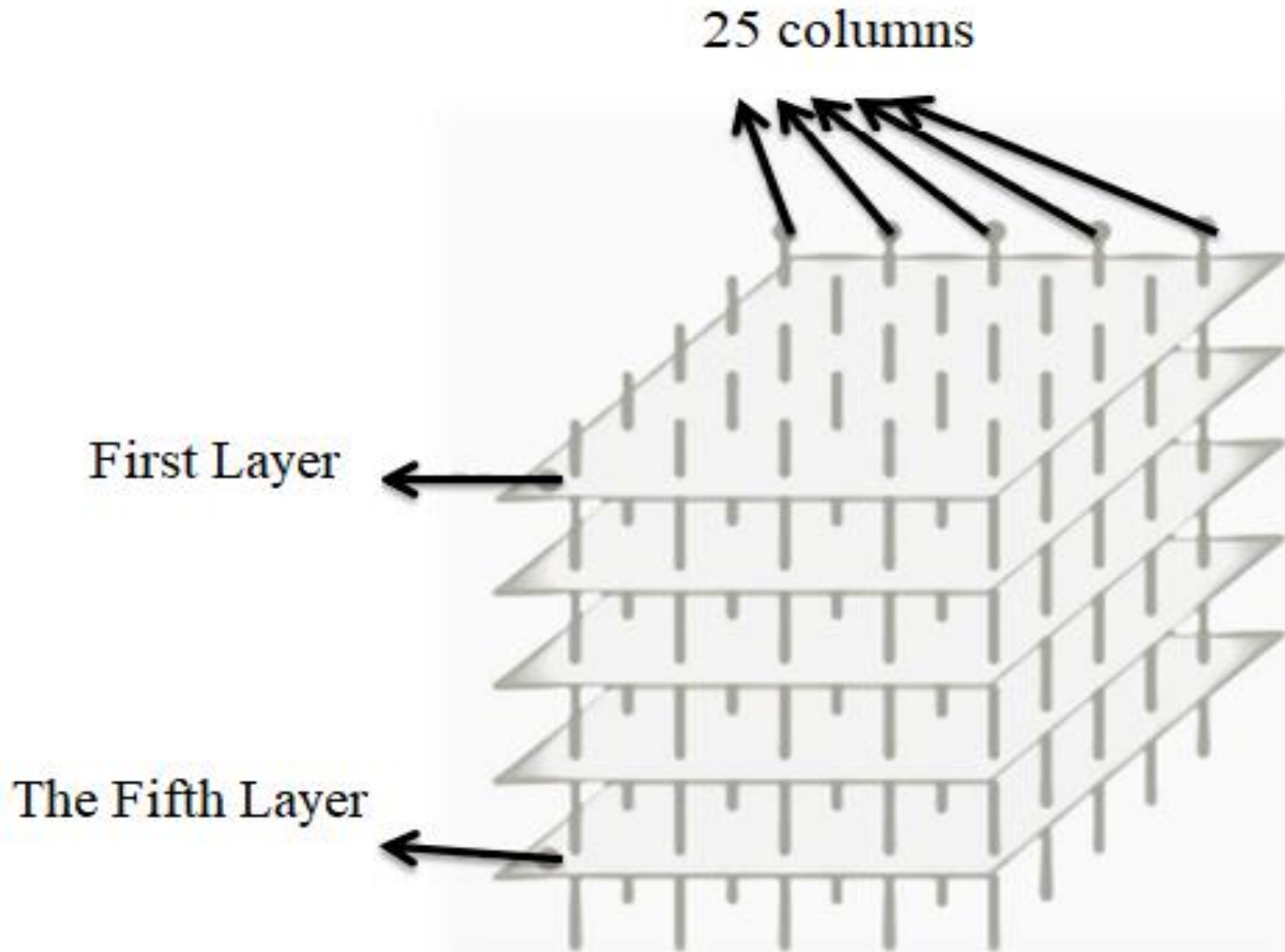


Figure 2. Structure of 3D LED cube

# Hardware implementation

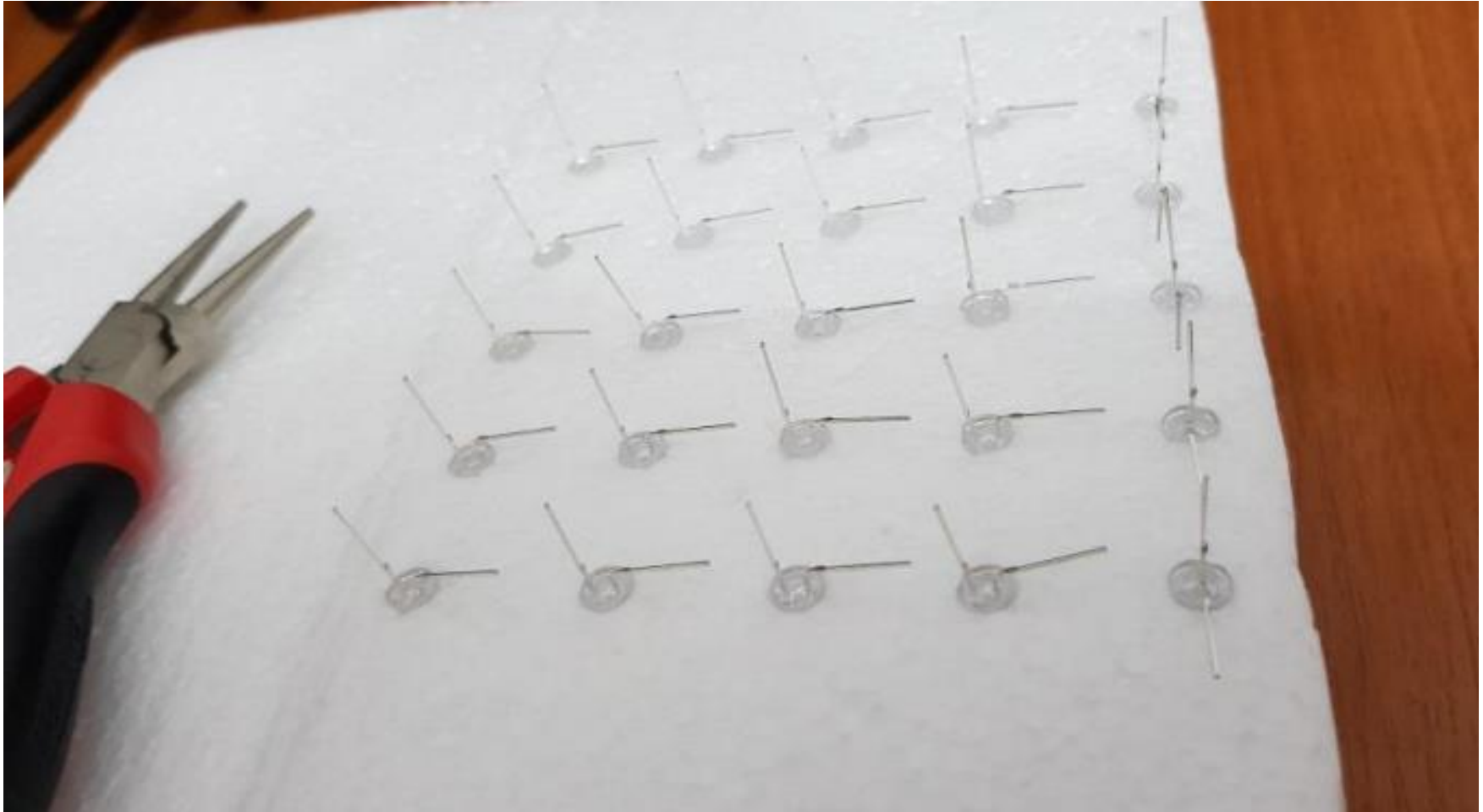


Figure 3. The polystyrene support and the first layer

# Hardware implementation

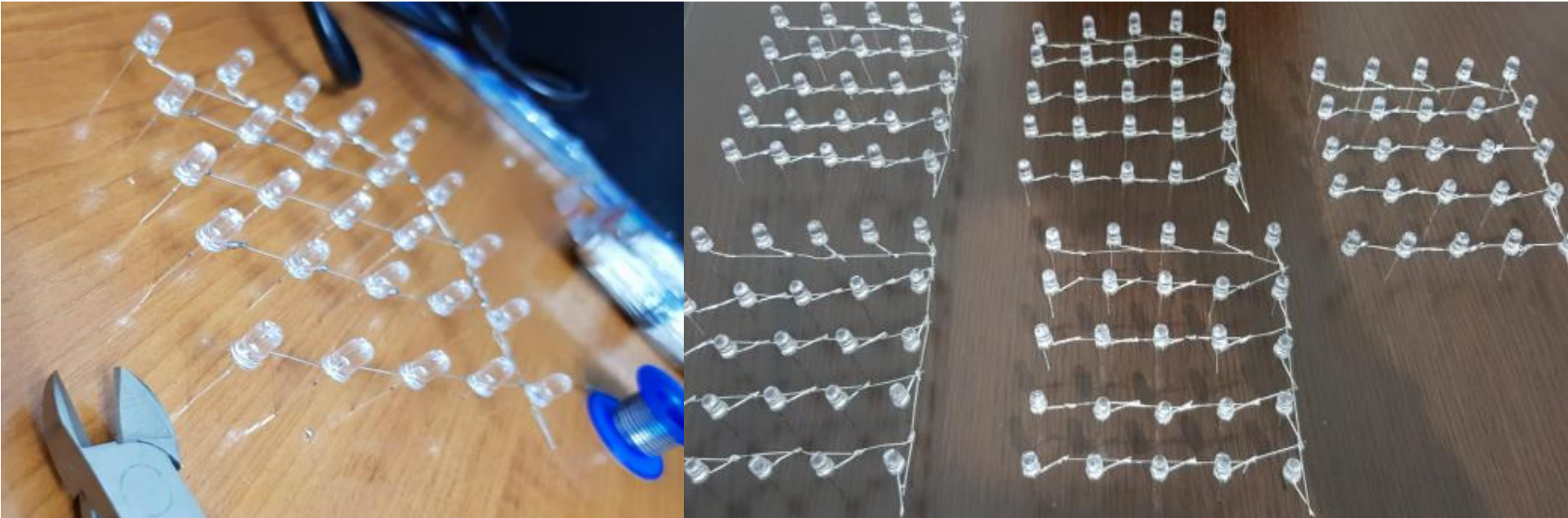


Figure 4. The layers of the 3D LED cube



# Hardware implementation



Figure 5. Electrical connections of the layers and final 3D LED cube

# Hardware implementation

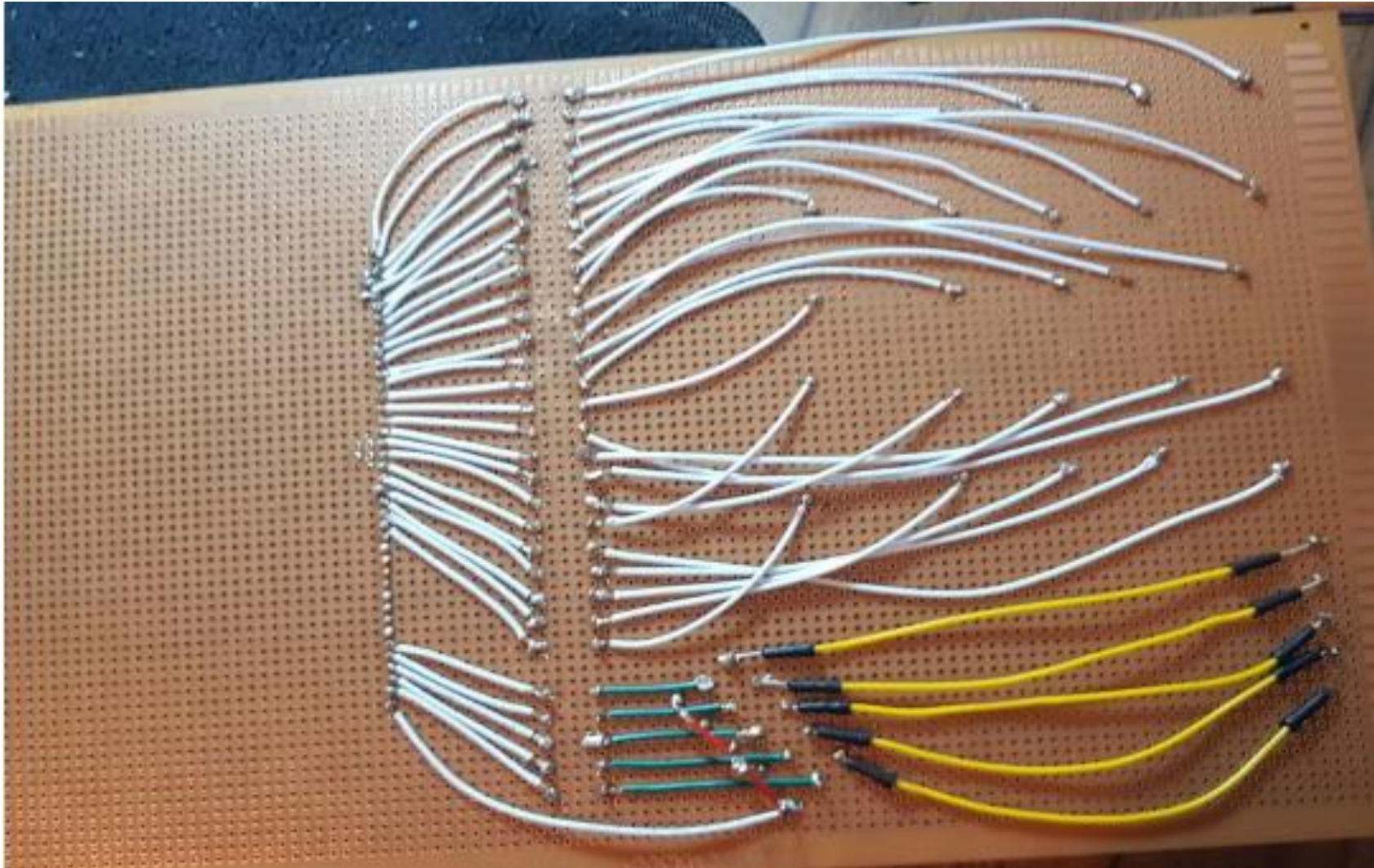


Figure 6. The connections on the test board



# Software implementation

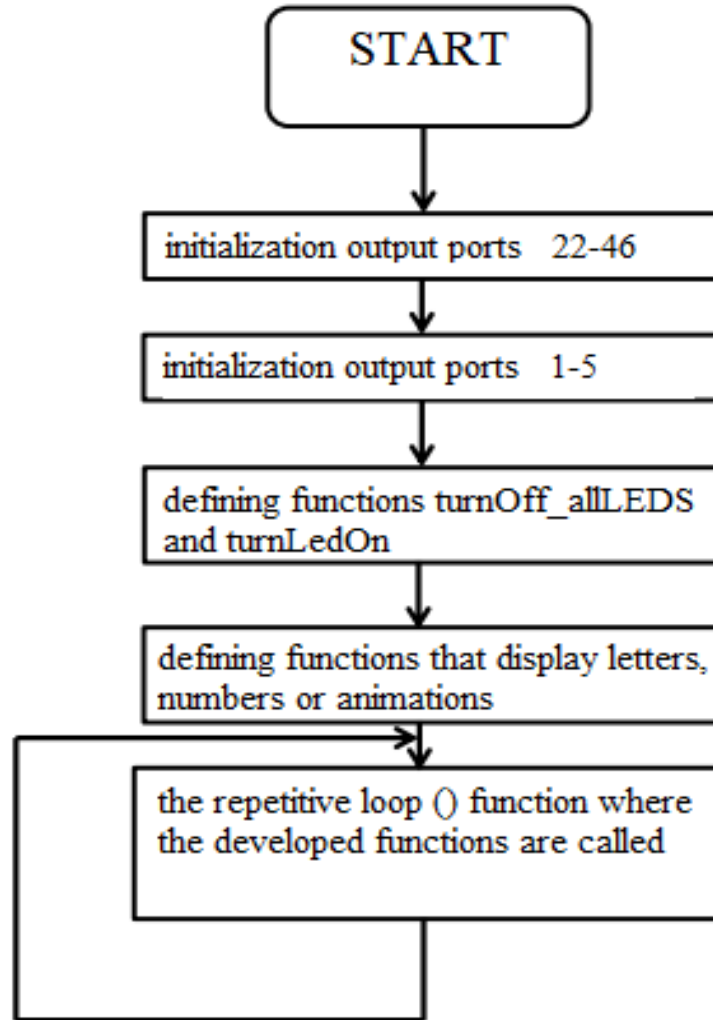


Figure 7. Logic diagram of source code

# Software implementation

```
void writeLetter(char letter,int row){  
if (letter=='A'){  
turnLedOn (23,row);  
turnLedOn (24,row);  
turnLedOn (25,row);  
turnLedOn (28,row);  
turnLedOn (30,row);  
turnLedOn (33,row);  
turnLedOn (34,row);  
turnLedOn (35,row);  
turnLedOn (38,row);  
turnLedOn (40,row);  
turnLedOn (43,row);  
turnLedOn (45,row);}  
else if (letter=='B'){  
.....  
}
```

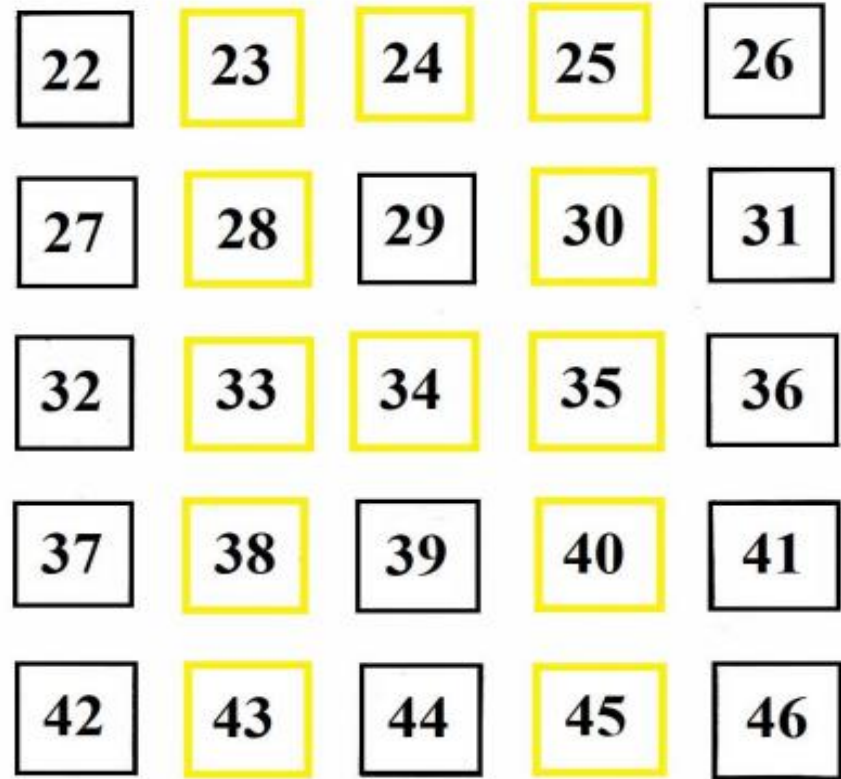


Figure 8. Example for letter “A”

# Conclusions

- The system can be used in various applications by modifying the structure of 3d LED cube or the source code.

***Thanks for your attention!***

# References

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- [4] Elementele de baza ale limbajului de programare C++ , <http://www.competentedigitale.ro/c/Elementele-de-baza-ale-limbajul-de-programare-C++.pdf>
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