Title: Snake game with 30 LEDs (Charlyplexing methode)

ICSP — J3
- MISO 1, SCK 3, RST 5
- 2 Vcc, 4 MOSI, 6
- GND

J4 Serial
- 6 GND
- 5
- 4 Vcc
- 3 RxD
- 2 TxD
- 1 RTS
- C1 100nF — RST

+ Power in — J2
Barrel_Jack_Switch — J1
SW6 SW_SPDT
D1 1N4001
9V 5V
Select Vcc — JP2
Serial Vcc — JP1
C5 100nF
L78L05 (optional) — U2
- VI, GND, VO
- C6 100nF — +5V
PWR_FLAG
GND

U1 ATmega328-PU
- 7 VCC
- 20 AVCC
- +5V — C2 100nF — GND
- AREF 21
- PB0 D8 14, PB1 D9 15, PB2 D10 16, PB3 MOSI 17, PB4 MISO 18, PB5 SCK 19, XTAL1/PB6 9, XTAL2/PB7 10
- PC0 A0 23, PC1 A1 24, PC2 A2 25, PC3 A3 26, PC4 A4 27, PC5 A5 28, RESET/PC6 1
- PD0 RxD 2, PD1 TxD 3, PD2 D2 4, PD3 D3 5, PD4 D4 6, PD5 D5 11, PD6 D6 12, PD7 D7 13
- GND 8, AGND 22 — GND
- Y1 16MHz, C3 22p, C4 22p — GND

LED matrix (Charlyplexing):
- LED1–LED5 → 100E R1 → CHP_A → A0
- LED6–LED10 → 100E R2 → CHP_B → A1
- LED11–LED15 → 100E R3 → CHP_C → A2
- LED16–LED20 → 100E R4 → CHP_D → A3
- LED21–LED25 → 100E R5 → CHP_E → A4
- LED26–LED30 → 100E R6 → CHP_F → A5
- led1_k

BZ1 Buzzer 5V — D9 — GND
SW1A Left — D8
SW2A Up — D7
SW3A Down
SW4A Right — D6, D5
RST — +5V — R7 10k — Reset — SW5A — GND

Designed by Roland
TechDen
Sheet: /
File: Snake_game.sch
Size: A4 Date: 2020-06-02 Rev: 3.1
KiCad E.D.A. kicad (5.1.5)-3 Id: 1/1

L1 Logo-RvD
L2 Logo-TechDen
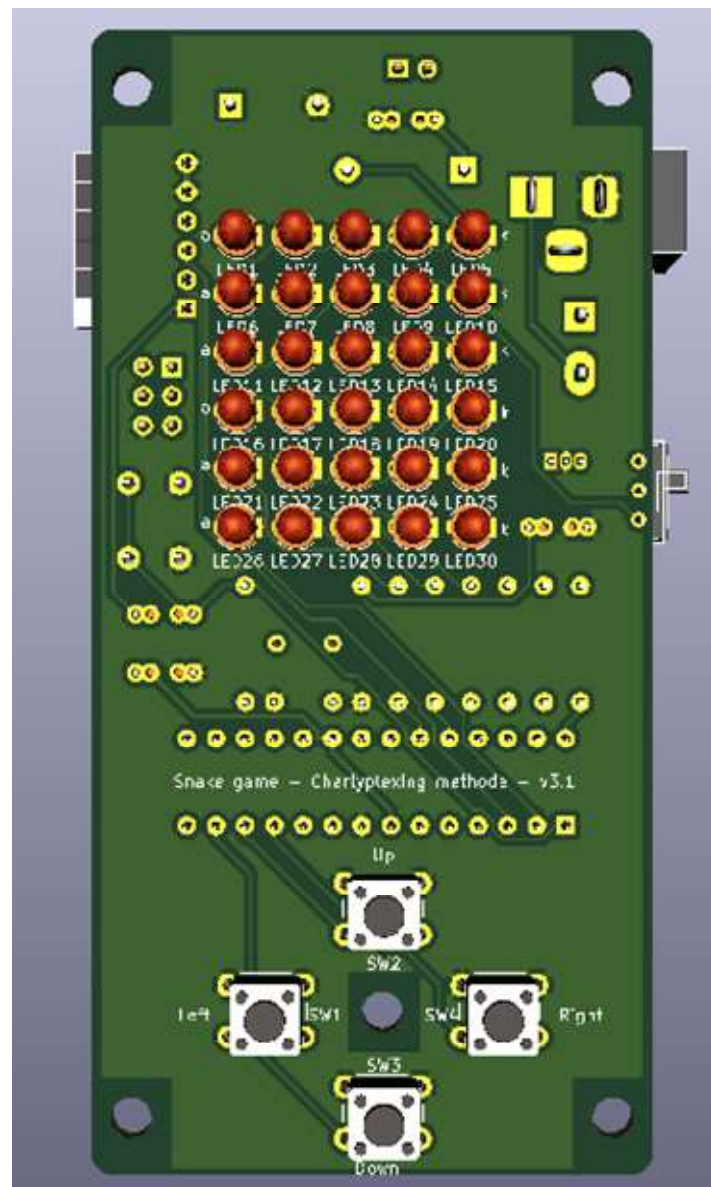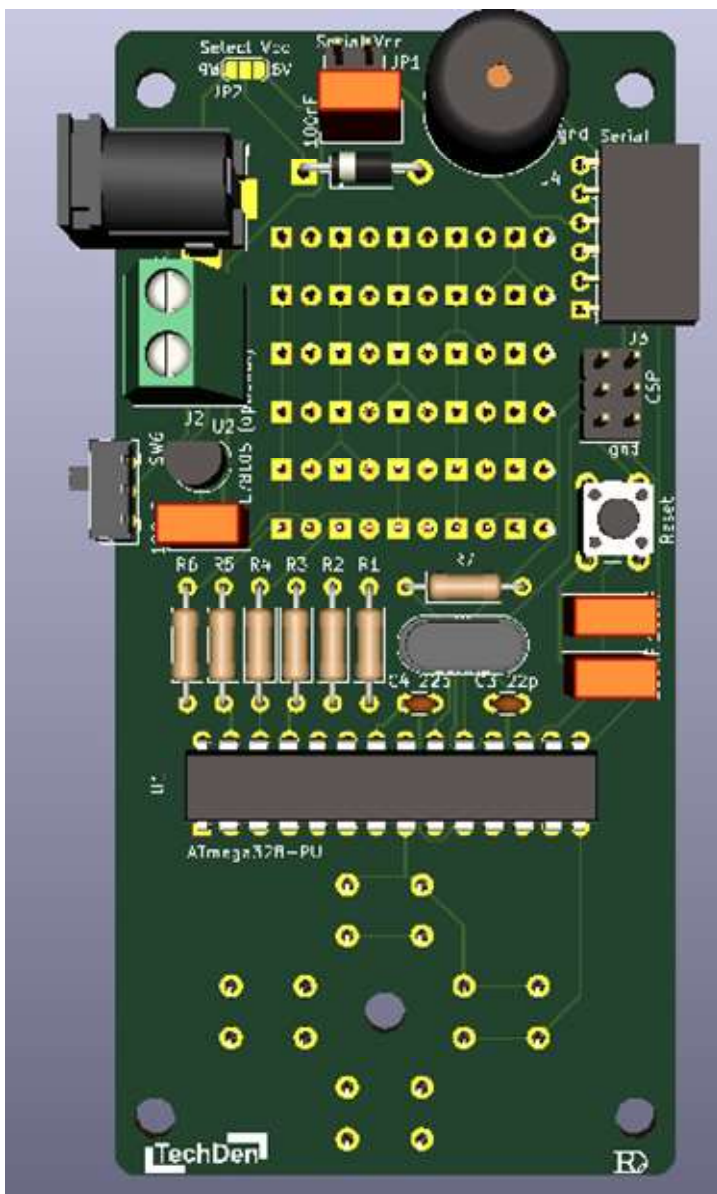
Snake_game v3.1 PCB

#	Quantity	Part	References	Value	Description	Price/part	Costs
1	1	PCB	Snake game	v3.1	PCB	€ 2,50	€ 2,50
2	1	Buzzer	BZ1	Buzzer 5V	Buzzer, polarized	€ 0,20	€ 0,20
3	4	C	C1 C2 C5 C6	100nF	Unpolarized capacitor	€ 0,02	€ 0,08
4	2	C	C3 C4	22p	Unpolarized capacitor	€ 0,05	€ 0,10
5	1	1N4007	D1	1N4007	1kV 1A General Purpose Rectifier Diode, DO-41	€ 0,02	€ 0,02
6	1	Barrel_Jack	J1	Barrel_Jack (optional)	DC Barrel Jack with an internal switch	€ 0,10	€ 0,10
7	1	Screw_Terminal_01x02	J2	+ Power in - (optional)	Generic screw terminal, single row, 01x02	€ 0,15	€ 0,15
8	1	Conn_02x03_Male	J3	ICSP	Generic connector, double row, 02x03, male	€ 0,02	€ 0,02
9	1	Conn_01x06_Female	J4	Serial	Generic connector, single row, 01x06, female	€ 0,02	€ 0,02
10	1	Jumperpins & jumper	JP1	Serial Vcc	Jumperpins & jumper	€ 0,02	€ 0,02
11	30	LED	LED1 - LED30	LED Red	Light emitting diode	€ 0,05	€ 1,50
12	6	R	R1 R2 R3 R4 R5 R6	100E	Resistor	€ 0,02	€ 0,12
13	1	R	R7	10k	Resistor	€ 0,02	€ 0,02
14	5	SW_Push_Dual	SW1	Push button	Push button switch	€ 0,02	€ 0,10
15	1	SW_SPDT	SW6	SW_SPDT (optional)	Switch, single pole double throw	€ 0,10	€ 0,10
16	1	ATmega328-PU	U1	ATmega328-PU	20MHz, 32kB Flash, 2kB SRAM, 1kB EEPROM, DIP-28	€ 1,50	€ 1,50
17	1	Socket	U1	28p	Socket 28p	€ 0,20	€ 0,20
17	1	78L05	U2	L78L05 (optional)	Positive 100mA 30V Linear Regulator, Output 5V, TO-92	€ 0,05	€ 0,05
18	1	Crystal	Y1	16MHz	Two pin crystal	€ 0,10	€ 0,10
18	1	9V batterij connector		Batterij conn (optional)	Batterij conn (optional)		€ -
19	1	FTDI board		FTDI (optional)	USB to TTL converter board (optional)	€ 0,60	€ 0,60
						Total	€ 7,50

Schematic: Snake game
Schematic Version: 3.1
Schematic Date: 2-6-2020