Hungarian Calendar Cube Design

All textures shown in the present document are copyright protected under the <u>Creative Commons License</u> terms.

Designers	André Boulouard	Walter Randelshofer
WebSites	http://www.mementoslangues.fr/	http://www.randelshofer.ch/

Introduction

The Magic Cube was invented in 1974 by Hungarian-born **Ernő Rubik** and was later called the **Rubik's Cube**. An English calendar cube was subsequently invented and calendar cubes have been designed in many other languages since then. A **Hungarian Calendar Cube** is a 3x3x3 **Rubik's Cube** used as a **Hungarian Calendar**. There are **Virtual Cubes** that can be *virtually* rotated and twisted on a computer screen and **Real Cubes** that can only be *physically* rotated and twisted by hand. A **Texture** is laid down on a Virtual Cube whereas real **Stickers** are stuck down on a Real Cube. A Hungarian Calendar Cube is designed by placing letters, numerals and words on a texture which is then laid down on a Virtual Cube (see http://www.randelshofer.ch/).

Hungarian Language – Useful Links	
http://impulzus.sch.bme.hu/info/magyar.shtml	http://en.wikipedia.org/wiki/Hungarian_language
http://www.omniglot.com/writing/hungarian.htm	http://www.unilang.org/wiki/index.php/Hungarian_months
http://www.mementoslangues.fr/Hongrois/Cours/HungarianLanguageCourse.pdf	

The date of the day can be displayed on a *selected* Cube Face by rotating and twisting some parts of the Cube. When this has been achieved, we say that the Cube has been *solved*. The following example shows the *initial* state of the Cube (Monday, January 01).

Virtual Hungarian Calendar Cube

Hungarian Calendar Cube Texture	Virtual Hungarian Calendar Cube

Design Particularities

Vowel harmony is a very important concept in Hungarian. Vowels are divided into two categories, back (*a á o ó u ú*) and front (*e é i í ö ő ü ű*), where *ő* and *ű* are longer versions of *ö* and *ü*. Note that all these letters are separate letters of the Hungarian alphabet i.e. A and Á, U and Ú, ö and ő should not be confused.

The sum of left- and right-hand letters of the 12 Hungarian abbreviated months equals 19 and the number of center letters equals 9, making the design difficulty level of this cube the same as of the Spanish calendar cube. The Hungarian calendar cube design is based on the design of the Spanish calendar cube invented by Alfonso Pérez Arnal and introduced in the Spanish forum El Cubo de Rubik de la A a la Z.

Hungarian Calendar Cube Design

Hungarian Calendar

| Hungarian Calendar				
Months			**Weekdays**	
English	**Hungarian**		**English**	**Hungarian**
January	JANuár	Január	Monday	Hétfő
February	FEBruár	Február	Tuesday	Kedd
March	MÁRcius	Március	Wednesday	Szerda
April	ÁPRilis	Április	Thursday	Csütörtök
May	MÁJus	Május	Friday	Péntek
June	JÚNius	Június	Saturday	Szombat
July	JÚLius	Július	Sunday	Vasárnap
August	AUGusztus	Augusztus		
September	SZEptember	Szeptember		
October	OKTóber	Október		
November	NOVember	November		
December	DECember	December		
9 letters on **B**ottom **L**eft corner cubes			J F M Á A S O N D	
9 letters on **B**ottom **C**enter cubes			A E Á Ú U Z K O **P**	
10 letters on **B**ottom **R**ight corner cubes			N B R J L G E T V C	
'**P**' **B**ottom **C**enter is a letter placed on an edge cube common to both **B**ottom and **M**iddle **L**ayers.				

Cube Layout

Weekdays are displayed on **T**op **L**ayer, days of the month on **M**iddle **L**ayer and months on **B**ottom **L**ayer.

Top Layer Layout
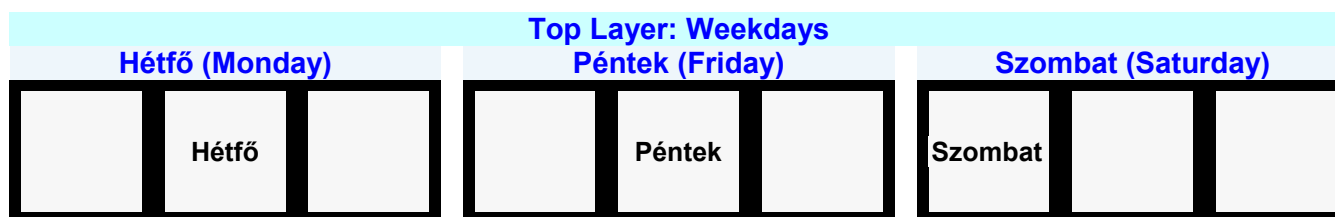
Weekdays on the **T**op **L**ayer are sorted out as follows:

1- 2 **T**op **L**eft weekdays and 1 blank on 1 corner cube: Szombat, Vasárnap, blank_**TL**/**TR** *
2- 5 **T**op **C**enter weekdays and 1 blank on 3 edge cubes: Hétfő, Kedd, Szerda, Csütörtök, Péntek, blank_**TC**
3- 2 blanks on 2 corner cubes from the **B**ottom **L**ayer: blank_**TL**/**TR**, blank_**TL**/**TR** (see **B**ottom **L**ayer)*

Weekdays are now *logically* combined on corner cubes:

1- 1 **T**op **L**eft corner cube: (Szombat,Vasárnap,blank_**TL**/**TR**)
2- 3 **T**o**p C**enter edge cubes: (Hétfő,Kedd), (Szerda,Csütörtök), (Péntek,blank_**TC**)

* This ensures that there is at least 1 blank on a **T**op **L**eft corner cube and 1 blank on a **T**op **R**ight corner cube for days 1 to 5 and 1 blank on a **T**op **R**ight corner cube for days 6 to 7.

So, now there are 7 corner and 9 edge cubes left that can be used for the 2 remaining layers.

Middle Layer Layout

JANuár 01 (January 01)	ÁPRilis 30 (April 30)	MÁJus 30 (May 30)
0 **1**	**3** **0**	**3** **0**

Numbers on the **M**iddle **L**ayer are sorted out as follows:

1- 4 **M**iddle **L**eft numbers, 1 blank, 1 **B**ottom **C**enter letter on edge cubes: 0, 1, 2, 3, blank_**ML**/**MR**, **P_BC**
2- 7 **M**iddle **C**enter numbers on center cubes: 0, 1, 2, 3, 4, 6/9
3- 3 **M**iddle **R**ight numbers, 1 blank on edge cubes: 5, 7, 8, blank_**ML**/**MR**

Numbers are now *logically* combined on edge cubes:

1- 3 **M**iddle **L**eft edge cubes: (0,1), (2,blank_**ML**/**MR**), (3,**P_BC**)
2- 2 **M**iddle **R**ight edge cubes: (5,7), (8,blank_**ML**/**MR**)

Note 1: Bottom **C**enter letter '**P**' is placed on an edge cube common to both **B**ottom and **M**iddle **L**ayers. This is the center letter of month Á**PR**ilis (April). There are only 30 days in this month, so there is no need for displaying 31 days in April. For this month, number '**30**' is displayed on the right, using **M**iddle **C**enter number '**3**'. Therefore letter '**P**' and **M**iddle **L**eft number '**3**' can be placed on a same edge cube.

So, now there are 7 corner and 4 edge cubes left that can be used for the Bottom Layer.

Bottom Layer Layout

JANuár (January)	ÁPRilis (April)	MÁJus (May)
J **A** **N**	**Á** **P** **R**	**M** **Á** **Y**

Letters on the **B**ottom **L**ayer are sorted out as follows:

1- 9 **B**ottom **L**eft letters on corner cubes: J, F, M, Á, A, S, O, N, D
2- 9 **B**ottom **C**enter letters on edge cubes: A, E, Á, Ú, U, Z, K, O, **P_BC**
3- 10 **B**ottom **R**ight letters on corner cubes: N, B, R, J, L, G, E, T, V, C

Letters are now *logically* combined on corner and edge cubes:

1- 3 **B**ottom **L**eft corner cubes: (J,F,M), (Á,A,S), (O,N,D)
2- 4 **B**ottom **C**enter edge cubes: (A,E), (Á,Ú), (U,Z), (K,O)
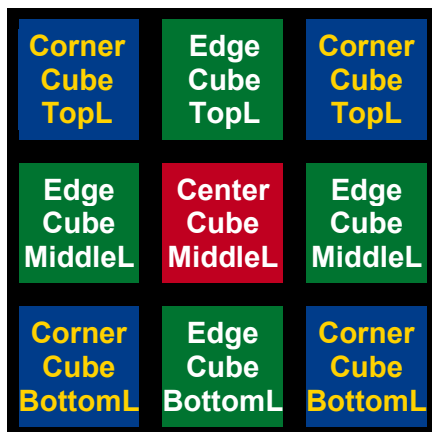3- 4 **B**ottom **R**ight corner cubes: (N,B,R), (J,L,G), (E,T,blank_**TL**/**TR**), (V,C,blank_**TL**/**TR**)

Hungarian Calendar Cube – Layout Table		
Reading from Left to Right		
Top **L**eft – Corner cube	**T**op **C**enter – Edge cubes	**T**op **R**ight – Corner cube
Szombat, Vasárnap, blank	Hétfő, Kedd, Szerda, Csütörtök, Péntek, blank	blank
Middle **L**eft – Edge cubes	**M**iddle **C**enter – Center cubes	**M**iddle **R**ight – Edge cubes
0, 1, 2, 3, blank	0, 1, 2, 3, 4, 6/9	5, 7, 8, blank
Bottom **L**eft – Corner cubes	**B**ottom **C**enter – Edge cubes	**B**ottom **R**ight – Corner cubes
J, F, M, Á, A, S, O, N, D	A, E, Á, Ú, U, Z, K, O, **P**	N, B, R, J, L, G, E, T, V, C

Terminology

In a 3x3x3 **Rubik's Cube**, there are 8 *Corner Cubes*, 12 *Edge Cubes*, 6 *Center Cubes* and 6 *Cube Faces*. There are also 4 Corner Cube faces, 4 Edge Cube faces and 1 Center Cube face *per Cube Face*, as shown below.

|		
Corner Cube TopL	Edge Cube TopL	Corner Cube TopL
Edge Cube MiddleL	Center Cube MiddleL	Edge Cube MiddleL
Corner Cube BottomL	Edge Cube BottomL	Corner Cube BottomL

There are 1 face per Center Cube, 2 faces per Edge Cube and 3 faces per Corner Cube.

There are also 3 horizontal *Layers* called *Top*, *Middle* and *Bottom Layers*.

| Cube Lexicon		
English	**Français**	**Deutsch**
Cube	Cube	Würfel
cubie, cube	cube, petit cube	Würfelteil, Teil des Würfels
face	face	Seite, Seitenfläche
front face	face avant	vordere Seite, vorne
back face	face arrière	hintere Seite, hinten
left face	face gauche	linke Seite, links
right face	face droite	rechte Seite, rechts
top face	face supérieure	obere Seite, oben
bottom face	face inférieure	untere Seite, unten
sticker	étiquette (autocollante), plaquette	Kleber, Farbkleber
tile	tuile, plaquette	Plättchen, Farbplättchen
center cube, center	cube central, centre	Mittelwürfel, Mittelstein, Mitte
edge cube, edge	cube-arête, arête	Kantenwürfel, Kantenstein, Kante
corner cube, corner	cube de coin, coin	Eckwürfel, Eckstein, Ecke
layer	couronne	Schicht, Scheibe
top layer	couronne supérieure	obere Schicht, obere Scheibe
middle layer	couronne intermédiaire	mittlere Schicht, mittlere Scheibe, Mittelschicht, Mittelscheibe
bottom layer	couronne inférieure	untere Schicht, untere Scheibe
orientation, direction	orientation	Orientierung
to solve	résoudre	lösen, zusammen drehen
to twist	pivoter	drehen
to rotate	tourner, effectuer une rotation	drehen
clockwise	dans le sens horaire	im Uhrzeigersinn
anticlockwise, counter-clockwise	dans le sens anti-horaire	im Gegenuhrzeigersinn

Corner Cubes Final Check

There are 8 Corner Cubes and 3 faces per Corner Cube. In the diagram below, each Corner Cube is displayed in 8 different colors and with the same color applied to each of its 3 faces. This diagram can be used as a convenient *visual aid* to check Design Rules (DRC).
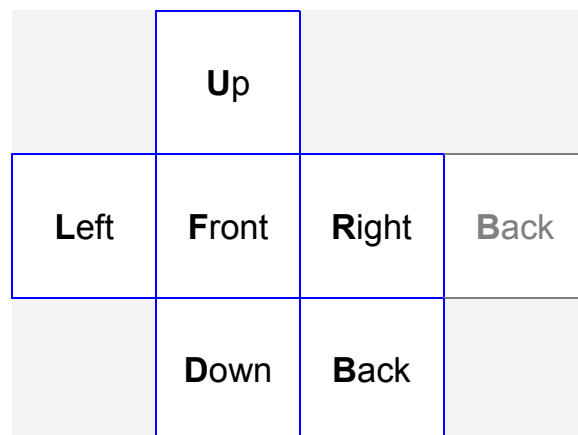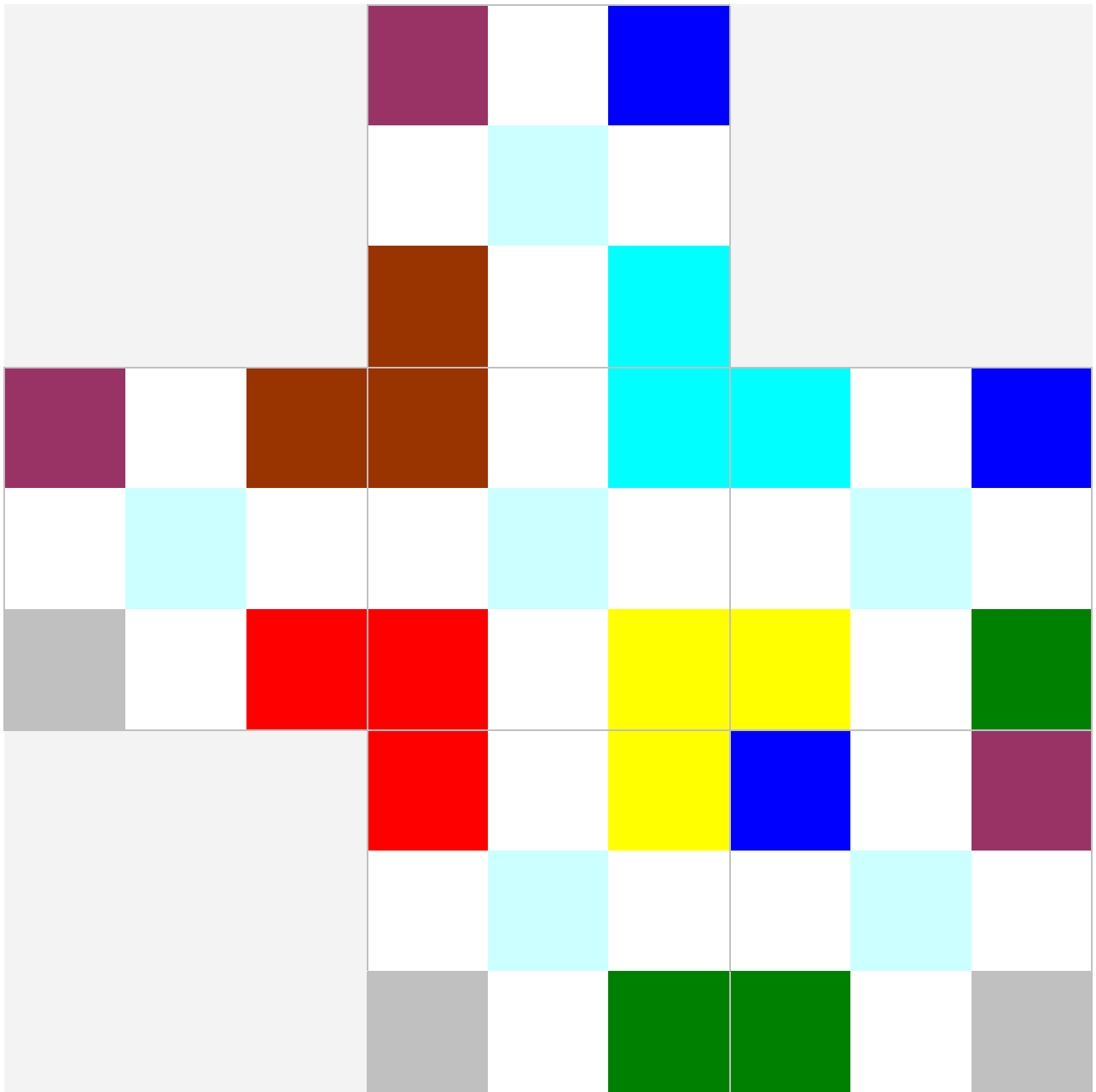
Edge Cubes Final Check

There are 12 Edge Cubes and 2 faces per Edge Cube. In the diagram below, each Edge Cube is displayed in 12 different colors and with the same color applied to each of its 2 faces. This diagram can be used as a convenient *visual aid* to check Design Rules (DRC).
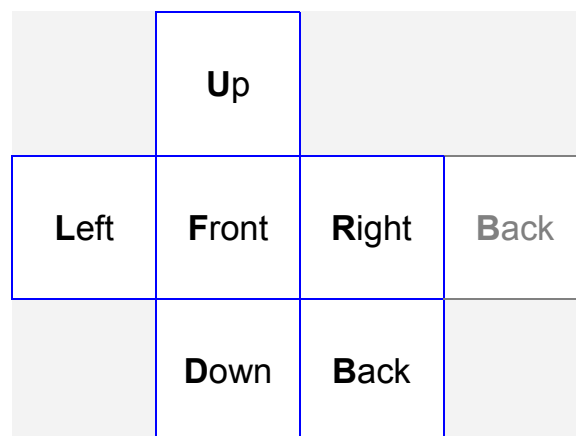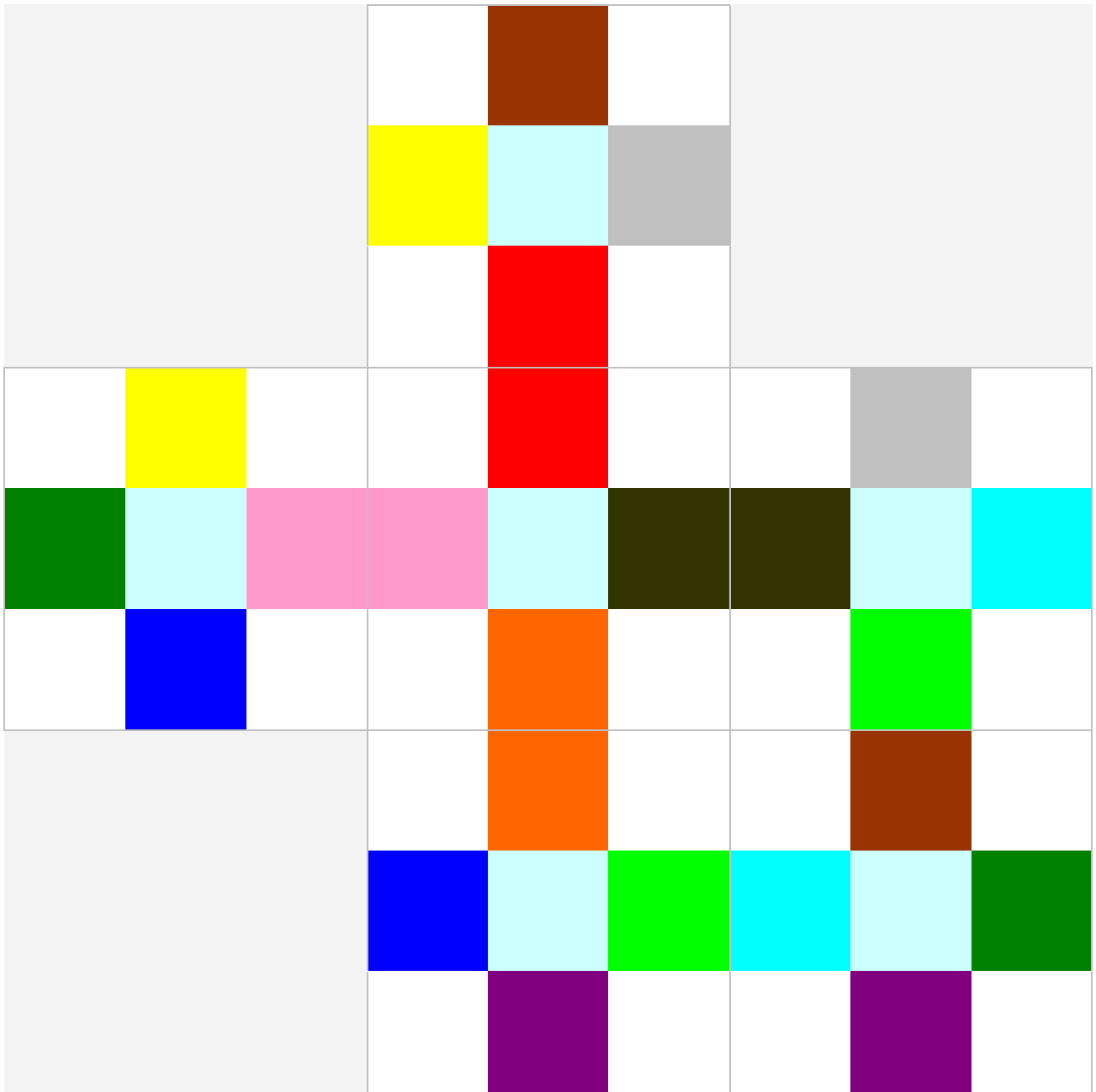
Texture Template

This is a texture template that can be printed out and used for writing down numbers and letters by hand *prior to* texture design. All is needed are pencil, rubber…and time.

Up	
Left	**F**ront	**R**ight	**B**ack
	Down	**B**ack