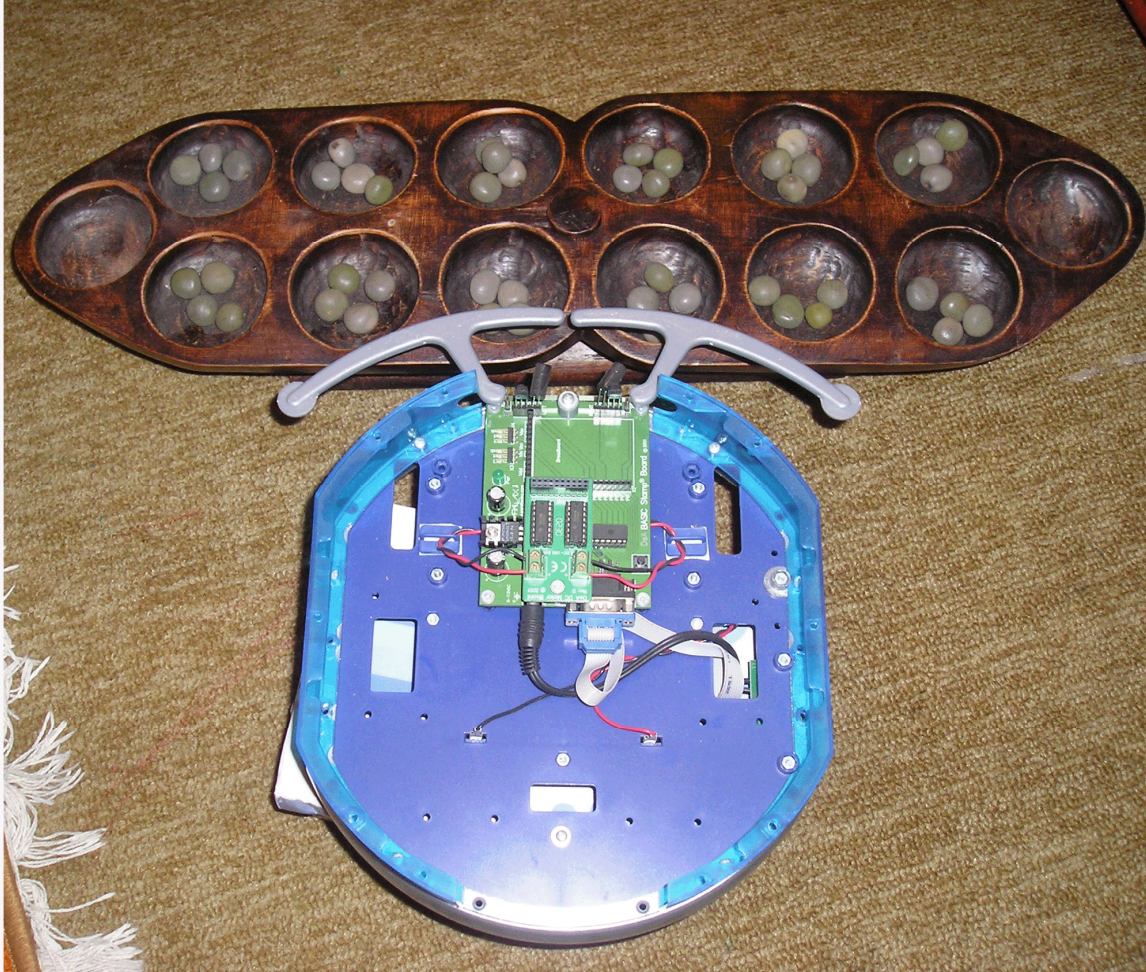


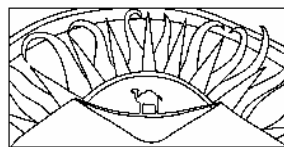
Layli Robot

Makiinad iswadda ah oo ciyaarta Layli Goobalay



Jama Musse Jama

Xuquuqda qoraalkan oo dhammi waxay u dhawran tahay qoraaga kor ku magacaaban oo laga xidhiidhi karo jmgurey@gmail.com.



PONTE INVISIBILE

Taxanaha *Dhaxalreeb*:

[1] Jama Musse Jama, Juun 2005

Layli Robot: Makiinad iswadda oo ciyaarta Layli Goobalay.

Taxanaha *Dhaxalreeb* waa qoraallo aan kalgal sagan lahayn oo sannadkiiba dhowr jeer kasoo baxa degelka redsea-online.com. Waxaa isku dubbarida qoraalladaas Jama Musse Jama, waxaana daabacda shirkadda buugaagta soo saarta ee Ponte Invisibile Ed. ee saldhiggeedu yahay Pisa, Italy.

Bilaash kaga soo rogo degelka www.redsea-online.com/e-books.

Layli Robot Makiinad iswadda ah oo ciyaarta Layli Goobalay

Jama Musse Jama
jmgurey@gmail.com

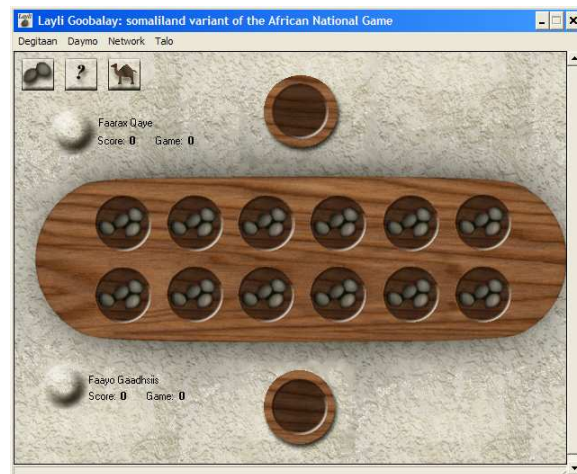


baahsanaanta ay ku baahsanyihiin bulshada Africa oo dhan iyo dadka asalkoodu kasoo jeedo Afrika.

Ciyaaraha noocan ah waxay leeyihiin kumanyaal magac oo looga yaqaano meelaha kala duwan ee laga ciyaaro. Inta badan waxay wax yar ku kala duwan yihiin xeerarka guuritaanka iyo kalabadinta. Layli Goobalay waa magaca looga yaqaano Soomaaliland, inkastoo meelaha ay soomaalidu dagto looga yaqaano magacyo kale sida *Riyo kadhaliis, jar* iyo kuwa kale.

Tabaha iyo xeeladaha loo ciyaaro Layli Goobalay kuma sharxi doono halkan. Waxaa warbixin dheeri ah laga eegan karaa www.redsea-online.com/games/layli, halkaas oo laga soo qaadan karo xataa barmaamij (*software*) bilaash ah oo lagula ciyaari karo Layli Goobalay kumbiyuuterka.

Waxaynu kusoo bandhigi doonaa qormadan sharciyada ciyaarta iyo xeerarka haga kala badinta. Waxa kale oo aynu kusoo bandhigi doonaa dhismaha *Robot* (makiinad iswadda) oo kula ciyaari karta Layli Goobalay.



Yoolka Ciyaarta

Yoolka ciyaartoy kastaa higsanayaa waa sidii uu uga qabsan lahaa xoolo ka badan inta uu ciyaartoyga kale qabsado. Qabsashada xoolaha waxaa dhigaya sharciyada hoos ku qoran.

Shariciyada Ciyaarta

Layli Goobalay waxaa lagu ciyaaraa miis yar oo leh laba iyo toban god iyo sideediyoafartan dhagax. Dhaqan soomaaliga ku salaysan reerguuraanimada, laguma ciyaari jirin miis, balse waxaa islamarkaa ciyaartu bilaabmayso laga qodan jirey dhulka labaiyotoban god oo yaryar, oo u yaala laba saf oo min lix god ah. Layli Goobalay waxa wada ciyaara laba ciyaartoy oo midkiiba leeyahay lixda god ee dhinaciisa xiga.

Degmada bilowga ah ee ciyaarta, god kasta waxaa ku jira afar dhagax (mar marka qaarkood waxaa la isticmaali jirey midho, laf timireed amase saalo geel). Sideediyoafartanka dhagax ee lagu ciyaarayaa waa isku wada mid.

Labada ciyaartoy waxay si talantaalli ah isu waydaarsadaan guuritaanka. Qofka gacanta iska lihi wuxuu doortaa mid ka mid ah godadkiisa oo aan madhnayn. Dabadeed waa uu ka qaadaa dhammaan dhagaxaanta ku jira godkaas isaga oo si lid-saacad wareeg ah ku wareegaya godadka oo dhan, mid kastana ku ridaaya dhagax kaliya isagoon ka boodin midna, kana bilaabaya socodkiisa godadkiisa ilaa uu u gudbaayo dhinaca kale, dabadeedna kusoo noqonaayo dhinaciisa (ilaa ay ka dhammaanayso gacantu).

Gacantu waxay dhammaataa marka dhagaxa ugu danbeeyaa uu ku dhaco god, dhacdadaasi waxaana ay noqon kartaa mid ka mid ah saddexdan siyood:

- In godka ugu danbeeya ee uu ciyaartoygu dhagaxa ku riday aanu madhnayn, islamarkaana ahayn *Uur* ama *Leelo* (eeg hoos macanaha *Leelo*). Marka ay sidaasi dhacdo wuxuu qaadayaa dhammaan dhagaxaanta ku jirta godkaas oo uu halkii ka bilaabayaa wareeg danbe, oo wadayaa ilaa inta markale uu imanayo god madhan.
- In godku uu ku riday madhan yahay islamarkaana uu yahay dhinaca ciyaartoyga kale. Markay sidani dhacdo waxaa ka wareegaysa gacanta oo waxaa guuraya ciyaartoyga kale iyadoon *wax xoolo ah la cunin*.
- In godka uu ku riday madhan yahay islamarkaana uu yahay dhinaciisa. Xaaladdan waxaynu u sii kala qaadaynaa saddex siyood:
 - ✓ Haddii godka kasoo horjeeda kan ay ku dhammaatay gacantu uu madhan yahay, markaa gacantaa wareegaysa iyadoon *wax xoolo ah la cunin* oo ciyaartoyga kale ayaa guuraya.
 - ✓ Haddii godka kasoo horjeeda kan ay ku dhammaatay gacantu ay ku jiraan 1, 2, 4 ama wax ka badan oo dhagaxaan ahi, markaa ciyaartoygu wuxuu cunayaa xabbadda u danbaysay ee gacantu ku dhammaatay iyo inta ku jirta

godka kasoo hor jeeda. Taasi waxay ka dhigaysaa in labada godba bannaanaadaan.

- ✓ Haddii godka kasoo horjeeda kan ay ku dhammaatay gacantu ay ku jiraan 3 dhagax, markaa waxaa la yidhaahdaa "*waxaa ii dhalatay Leelo ama Uur*", waxaana lagu calaamadiyaa labada god ee iska soo horjeeda laanqayr, iyadoo ka saddexdu ku jiraan inta mid laga soo qaado. lagu ridayo ka midhku ku jiro. Laga bilaabo markaas labada god waxay u suntan yihiin ciyaartoga oo lamana cuni karo waxa ku jira, lagamana qaadi karo dhagax si loo bilaabo gacan. Markay ciyaartu dhammaato waxaa qaadanaya wixii kuugu biiray *Uurkaas* oo dhan ciyaartoyga iska leh *Uuka*.

Ciyaartu waxay dhammaataa marka labada ciyaartow midkood guuri kari waayo oo ay ka dhammaadaan xoolaha godadkiisa ku jiraa (marka laga reebo godadka *Uurka* ah).

Waxaa badiya ciyaartoyga urursada xoolo badan marka la isu tirsado wixii la kala cunay.

Tusaale 1^{aad}: sida ay u dhalato *Leelogoobalay* (amase god *Uur*)

Waxa aynu ku kala magacaabaynaa C1 iyo C2 labada ciyaartoy, halka aynu godadkana ku kala astaynayno B ilaa Q. R1 waa reerka ciyaartoyga C1 (godadka B, T, J, X, K, D) haka R2 ay ka tahay reerka C2 (godadka R, S, C, G, F, Q).

Kasoo qaad in ciyaartoyga C1 uu gacanta leeyahay, miiskana ay dhagxaant u saran yihiin sansaanka hoos ku cad:

	B	T	J	X	K	D	
C1	4	2	7	4	1	4	R1
C2	1	0	4	1	0	8	R2
	R	S	C	G	F	Q	

Haddii uu C2 ha bilaabo guuritaankiisa godka Q, wuxuu siddeeda xabbo kala dhigayaa godadka D, K, X, J, T, B, R iyo S si lid saacad wareeg ah. Waxaa inoo soo baxaaya shaxankan hoose:

	B	T	J	X	K	D	
C1	5	3	8	5	2	5	R1
C2	2	1	4	1	0	0	R2
	R	S	C	G	F	Q	

Maadaama ay gacantu ku dhammaatay godka S oo madhanaa, T oo ka soo horjeedana ay ku jiraan 3 dhagax, markaa waxaa dhalatay *leelogoobalay* (amase *Uur*). Mid baa lagasoo qaadayaa T oo la dhigayaa S si ay labadaba ugu jiraan min 2 dhagax, waxaana lagu qaydayaa iskutallaabo caddaynaysa in godadkaasi ay *leelogoobalay* yihiin (ama *xaamilo* u yihiin ciyaartoyga C2) oo aan la taaban karin wixii ku dhaca.

	B	T	J	X	K	D	
C1	5	2	8	5	2	5	R1
C2	2	2	4	1	0	0	R2
	R	S	C	G	F	Q	

Tusaale 2^{aad}: guuritaanka laba gacmood

Kasoo qaad in sida ku cad tusaalaha 1^{aad} ay C1 iyo C2 kala yihiin labada ciyaartoy eek ala leh reeraha R1 iyo R1 siday u kala horreeyaan. Godkasta bilowga ciyaarta waxa ku jira 4 dhagax. Markaa degmada kowaad waxay u noqonaysaa sidan.

	B	T	J	X	K	D	
C1	4	4	4	4	4	4	R1
C2	4	4	4	4	4	4	R2
	R	S	C	G	F	Q	

Kasoo qaad in C1 uu horbilaabo ciyaarta, oo ka bilaabo gacantiisa isaga oo ka guuraya godka T. Sida sharcigu dhigayo wuxuu u guurayaa lid saacad wareeg.

Wuxuu qaadayaa dhammaan 4ta dhagax ee ku jira b, kuna qaybinayaa godadka ilaa iyo inta uu dhagaxa ugu danbeeyaa ku dhacaayo godka C. Maadaama aanu C madhanyn, isla markaana ahayn god *Uur (leelo)*, ciyaartoy C1 wuxuu sii wadanayaa gacanta. Xaaladda cusub ee miisku waa sidan.

	B	T	J	X	K	D	
C1	5	0	4	4	4	4	R1
C2	5	5	5	4	4	4	R2
	R	S	C	G	F	Q	

C1 wuxuu qaadayaa 5ta dhagax ee imminka ku jira godka C, waxaana uu ku qaybinayaa godadka ilaa dhagaxa ugu danbeeyaa ku dhaco K. Markale maadaama aanu K madhnayn, C1 ayaa sii wadanaaya gacanta. Dhigaalka labaad wuxuu noqonayaa sidan.

	B	T	J	X	K	D	
C1	5	0	4	4	5	5	R1
C2	5	5	0	5	5	5	R2
	R	S	C	G	F	Q	

K waxaa imminka ku jira 5 dhagax, sidaa darteed C1 wuu wada qaadayaa kuna qaybinayaa godadka ku xiga. Qaab dhigaalka saddexaad ee gacanta C1 wuxuu noqonayaa.

	B	T	J	X	K	D	
C1	6	1	5	5	0	5	R1
C2	6	5	0	5	5	5	R2
	R	S	C	G	F	Q	

Markale C1 wuxuu ka guurayaa R isagoo qaadaya 6 dhagax, waxaanay ku dhammaanayaan D. Waakan wajiga afraad.

	B	T	J	X	K	D	
C1	6	1	5	5	0	6	R1
C2	0	6	1	6	6	6	R2
	R	S	C	G	F	Q	

Ugu danbayn C1 wuxuu rarayaa 6 dhagax ee ku jira D, kuwaasoo ku dhammaanaya R oo ah god madhan. Maadaama R uu yahay xerada ciyaartoyga C2, C1 waxba ma cunaayo e wuxuu iska wareejinayaa gacanta. Gacanta C1 waxay kusoo gebagaboysaa qaabkan.

	B	T	J	X	K	D	
C1	7	2	6	6	1	0	R1
C2	1	6	1	6	6	6	R2
	R	S	C	G	F	Q	

Haddii uu C2 ka bilaabo gacantiisa godka G, markaa wuxuu qaadayaa 34ka wareeg ee hoos ku taxan. Tallaabo kasta waxaa sawiran qaabka uu ka bilaabay, godka uu ka guurayo iyo ka uu ku dhammaanayo, waxaa kale oo bilo ku dhex oodan inta dhagax ee uu qaadayo. Tusaale ahaan kan kowaad, C1 wuxuu ka guurayaa G oo ay ku jiraan 6 dhagax, waxaana uu ku dhammaanayaa J oo ay ku sii jireen 6 dhagax. Qaabka soo baxayaan waa sedan hoos ku qoran:

G -> J (6)

	B	T	J	X	K	D	
C1	7	2	7	7	2	1	R1
C2	1	6	1	0	7	7	R2
	R	S	C	G	F	Q	

J -> F (7)

	B	T	J	X	K	D	
C1	8	3	0	7	2	1	R1
C2	2	7	2	1	8	7	R2
	R	S	C	G	F	Q	

F -> R (8)

	B	T	J	X	K	D	
C1	9	4	1	8	3	2	R1
C2	3	7	2	1	0	8	R2
	R	S	C	G	F	Q	

R -> G (3)

	B	T	J	X	K	D	
C1	9	4	1	8	3	2	R1
C2	0	8	3	2	0	8	R2
	R	S	C	G	F	Q	

G -> Q (2)

	B	T	J	X	K	D	
C1	9	4	1	8	3	2	R1
C2	0	8	3	0	1	9	R2
	R	S	C	G	F	Q	

Q -> C (9)

	B	T	J	X	K	D	
C1	10	5	2	9	4	3	R1
C2	1	9	4	0	1	0	R2
	R	S	C	G	F	Q	

C -> D (4)

	B	T	J	X	K	D	
C1	10	5	2	9	4	4	R1
C2	1	9	0	1	2	1	R2
	R	S	C	G	F	Q	

D -> T (4)

	B	T	J	X	K	D	
C1	10	6	3	10	5	0	R1
C2	1	9	0	1	2	1	R2
	R	S	C	G	F	Q	

T -> F (6)

	B	T	J	X	K	D	
C1	11	0	3	10	5	0	R1
C2	2	10	1	2	3	1	R2
	R	S	C	G	F	Q	

F -> K (3)

	B	T	J	X	K	D	
C1	11	0	3	11	6	1	R1
C2	2	10	1	2	0	2	R2
	R	S	C	G	F	Q	

K-> S (6)

	B	T	J	X	K	D	
C1	12	1	4	0	7	2	R1
C2	3	11	2	3	1	3	R2
	R	S	C	G	F	Q	

S-> R (11)

	B	T	J	X	K	D	
C1	13	2	5	1	0	2	R1
C2	4	1	2	3	1	3	R2
	R	S	C	G	F	Q	

R-> F (4)

	B	T	J	X	K	D	
C1	13	2	5	12	1	2	R1
C2	0	1	3	4	2	3	R2
	R	S	C	G	F	Q	

F-> D (2)

	B	T	J	X	K	D	
C1	13	2	5	12	1	3	R1
C2	0	1	3	4	0	4	R2
	R	S	C	G	F	Q	

D-> J (3)

	B	T	J	X	K	D	
C1	13	2	6	13	2	0	R1
C2	0	1	3	4	0	4	R2
	R	S	C	G	F	Q	

J-> G (6)

	B	T	J	X	K	D	
C1	14	3	0	13	2	0	R1
C2	1	2	4	5	0	4	R2
	R	S	C	G	F	Q	

G-> X (5)

	B	T	J	X	K	D	
C1	14	3	0	14	3	1	R1
C2	1	2	4	0	1	5	R2
	R	S	C	G	F	Q	

X -> T (14)

	B	T	J	X	K	D	
C1	15	5	2	1	4	2	R1
C2	2	3	5	1	2	6	R2
	R	S	C	G	F	Q	

T -> G (5)

	B	T	J	X	K	D	
C1	16	0	2	1	4	2	R1
C2	3	4	6	2	2	6	R2
	R	S	C	G	F	Q	

G -> Q (2)

	B	T	J	X	K	D	
C1	16	0	2	1	4	2	R1
C2	3	4	6	0	3	7	R2
	R	S	C	G	F	Q	

Q -> R (7)

	B	T	J	X	K	D	
C1	17	1	3	2	5	3	R1
C2	4	4	6	0	3	0	R2
	R	S	C	G	F	Q	

R -> F (4)

	B	T	J	X	K	D	
C1	17	1	3	2	5	3	R1
C2	0	5	7	1	4	0	R2
	R	S	C	G	F	Q	

F -> X (4)

	B	T	J	X	K	D	
C1	17	1	3	3	6	4	R1
C2	0	5	7	1	0	1	R2
	R	S	C	G	F	Q	

X -> B (3)

	B	T	J	X	K	D	
C1	18	2	4	0	6	4	R1
C2	0	5	7	1	0	1	R2
	R	S	C	G	F	Q	

B -> Q (18)

	B	T	J	X	K	D	
C1	1	3	5	1	7	5	R1
C2	2	7	9	3	2	3	R2
	R	S	C	G	F	Q	

Q -> X (3)

	B	T	J	X	K	D	
C1	1	3	5	2	8	6	R1
C2	2	7	9	3	2	0	R2
	R	S	C	G	F	Q	

X -> T (2)

	B	T	J	X	K	D	
C1	1	4	6	0	8	6	R1
C2	2	7	9	3	2	0	R2
	R	S	C	G	F	Q	

T -> C (4)

	B	T	J	X	K	D	
C1	2	0	6	0	8	6	R1
C2	3	8	10	3	2	0	R2
	R	S	C	G	F	Q	

C -> R (10)

	B	T	J	X	K	D	
C1	3	1	7	1	9	7	R1
C2	4	8	0	4	3	1	R2
	R	S	C	G	F	Q	

R -> F (4)

	B	T	J	X	K	D	
C1	3	1	7	1	9	7	R1
C2	0	9	1	5	4	1	R2
	R	S	C	G	F	Q	

F -> X (4)

	B	T	J	X	K	D	
C1	3	1	7	2	10	8	R1
C2	0	9	1	5	0	2	R2
	R	S	C	G	F	Q	

X -> T (2)

	B	T	J	X	K	D	
C1	3	2	8	0	10	8	R1
C2	0	9	1	5	0	2	R2
	R	S	C	G	F	Q	

Talaabada ugu danbaysaa ee gacantani waxay noqonaysaa in uu ka guuro T.

T -> R (2)

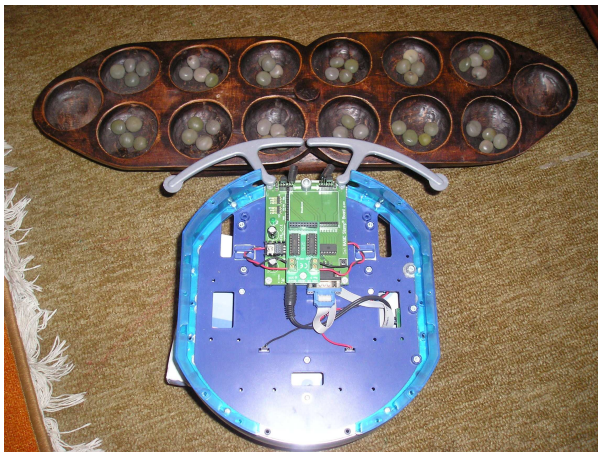
	B	T	J	X	K	D	
C1	4	0	8	0	10	8	R1
C2	1	9	1	5	0	2	R2
	R	S	C	G	F	Q	

Maadaama uu godka R madhan yahay, gacanta C2 way dhammaanaysaa. Sidoo kale C2 wuxuu cunayaa 4ta dhagax ee ku jira godka B (ka kasoo hor jeeda R) iyo waliba xabbaddii u danbaysay ee ku dhacday R.

Markale aaya gacantu u wareegaysaa C1.

Sidaas ayay C1 iyo C2 si talantaalli ah isu waydaarsanayaan ciyaarta, ilaa midkood guuri kari waayo oo laga xaalufiyo degaankiisa. Markaa qof kastaa intuu cunay ayuu tirsanayaa, waxaan guulaysanaya midkii tiro badan oo xoolo ah cunay.

Makiinad iswadda (Robot)



LAYLI ROBOT (LR) waa makiinad yar oo dhiskeedu farsamo ahaan aanu aad u adkayn, gurigana lagu samayn karo haddii laga soo iibsado waaxyeheeda dukaamada iibiya qalabka dhismaha elektrooniga ee loo yaqaan “home made robots”, isla markaana aqoon fiican loo leelahay dhiska qalabka yaryar ee *electronic-ga (microcontrollers)*. LR waxay la ciyaari kartaa qof bini aadmi ah Layli Goobalay, waxaana ay ku shaqeysaa barmaamijka Layli 1.0 (www.redsea-online.com/games/layli).

Sifo farsamo - hardware

LR waxay ku salaysan tahay loox farsamo-gacmeed (board of education) iyo “Microcontroller”-ka la yidhaahdo “Basic Stamp BS/2” ee ay samaysay shirkadda Parallax ee carro maraykan (www.parallax.com). LR waxay leedahay xusuus qaadda 2048 bayt oo ah nooca la yidhaahdo EEPROM (Electrically Erasable Read Only Memory). Waxaa quudiya laba xajaar oo noocodu yahay AAA oo dhalinkara 1.5v midkiiba. Waxaa ay leedahay shaarubo awood u siiya inay ku dareento marka ay taabato shay, islamarkaana ay kaga leexan karto. Waxa kale oo ay leedahay laba dareeme oo ku shaqeeya mowjadaha InfraRed ka oo ay ku dareemi karto waxyaabo ka durugsan. Waxaa intaa u dheer gacan ay ku xantoobin karto dhagaxaanta yaryar ee ciyaarta Layli Goobalay.

Sifo farsamo - software

LR barmaamijka ku duuban xiskeeda waxaa lagu qorey luuqadda la yidhaahdo *PBasic* ee ay samaysay shirkadda *Parallax*, waana in ku filan sidii ay u ciyaari lahayd laba gacmood oo Layli Goobalay ah. Xasuusteeda (*physical memory*) oo aad u kooban (2Kb kaliya) awgeed, intaa ka badan kaligeed ma ciyaari karto, balse waxay awood u leedahay inay Kombiyuuter leh albaab *Infrared* oo barmaamika Layli Goobalay ku duuban yahay ay la xidhiidho kaligeed oo ay waydiiso kolba godkay ka guuri lahayd. Si ay *Infrared* u isticmaali karto waa inay u jirtaa ugu badnaan ilaa lix tallaabo kombiyuuterka.

Qaab dhismeedka (*Physical description*):



LR waxay leedahay saddex shaag oo yarayar oo labada danbe ay ka samaysan yihiin caag (*polyethylene*) oo ay kala wadaan laba mishiin oo yaryar oo kurogma daynabo (*servos machine*); shaagga horena wuxuu ka samaysan yahay fataatiir yar oo caag ah; waxaan kolba jihada shaagga hore xukuma sida ay labada danbe u dhaqaaqaan. Waaxyaha muhiimka ah ee *Microcontroller*ka, *Educational Board*-ka, *EEPROM* memoryga; xajaarada

iyo waayirada oo dhan waxaa ku hadoodilan gal u samasan qaab sanduuqeed. Wajigana waxaa kaga samaysan daldaloollo u sansaan eg indho, af, san iyo laba dhegood oo ku xardhan loox qoran.

Marka ay wada dhisan tahay LR wuxuu ballaceedu leegyahay 35 cm, dhererkeeduna marka laga reebo gacanta dhagaxaanata ciyaarta sare u qaadqaadaysa, waa 40 cm, dhegeeduna waa 25 cm. Gacantu kolba waxay ku xidhan tahay miiska godadku ka qodan yihiin ee Layli Goobalayda lagu dul ciyaaraayo oo waa la dheereyn karaa.

LR waxay ku dul ciyaartaa mid ka mid ah miisas dhaqameedada yaryar ee Layli Goobalayda lagaga ciyaari jirey dalal ka mid ah qaaradda afrika, gaar ahaan Itoobiya iyo Calateriya.

Maxay u dhalatay LR?

Waxaa baryahan danbe aqoonyahannada barista xisaabtu xoogga saarayeen sidii ummad kasta dhaqankeeda soo jireenka ah looga soo dhexsaari lahaa cilmiga ku jira; cilmigaas oo gaar ahaan ummadaha afrikaanka ah ee aqoontooda dhaqameed ku salaysan tahay cilmi-dhegoodka, ay adag tahay sidii loo ururin lahaa cilmi-hiddoodkooda. Iyadoo halkaa laga duulayo, ayaa waaxda xisaabta ee *Ethnomathematics* inbadan hadda wax laga qoray. Haddaba dhaqanka soomaalida oo ah mid fac wayn, waxay tahay lagama maarmaan in laga dhex doono farsamooyin iyo talooyin anfici kara fududaynta fahanka xisaabta iyo dhammaan fikradaha dahsoon ee laamaha cilmiga.

Waxaa la isku raacsan yahay in ciyaar dhaqameedyadu wax badan ka qaadan karaan barista iyo baridda xisaabta. Sidaa darteed ayay usoo bexeen barmaamijyada ciyaar dhaqameedka soomalida ee *shax* iyo *layli* (<http://www.redsea-online.com/games>), isla markaana uu usoo baxay sannadkii 2000 buug ku qoran afingiriisi oo la yidhaahdo “*Shax: the preferred game of our camel-herders and other traditional african entertainments*” iyo sannadkii 2003 buug ku qoran aftalyaani oo la yidhaahdo “*Layli Goobalay: Variante Somala del Gioco Nazionale Africano*”.

LR waa qaybtii saddexaad ee dariiqan aan kusoo bandhigaayo ciyaar dhaqameedyada laga ciyaaro qaaradda Africa ee loo isitcmaali karo inay kaabaan barista iyo xiisagalinta xisaabta ee ardeyda asalkoodu kasoo jeedo Africa, ha joogaan Afrika ama debeddeede.

Bogga www.redsea-online.com waxaa laga furay madal (*Forum*) ka hadlaaya makiinaddan iswadda balse muhiimaddiisu tahay dib usoo noolaynta dhaxalreebka ah ee dhaqanka iyo hiddaha soo jireenka ah, kuwaasoo inta badan ay kormaraan oo hafiyaan tiknoolajiyadda cusubi. Yoolka madashani waa in iyada oo la isticmaalayo farsamada casriga ah in dhaxal looga dhaqankeena jilasha soo koraya.

*Layli Goobaley
Nin garaad liyo
Geelu kugu yuus!*

Tixraac

- Barmaamijka Layli 1.0 wuxuu ku shaqeeyaa Windows, waxaana laga soo raran karaa www.redsea-online.com.
- Buugga Shax wuxuu ku qoran yahay Afingiriisi. Summadda tixraaciisa oo dhammi waa “Jama Musse Jama, *Shax: the preferred game of our camel-herders and other traditional african entertainments*, SUN MOON LAKE, Roma, 2000. “
- Buugga Layli Goobalay wuxuu ku qoran yahay Aftalyaani. Summadda tixraaciisa oo dhammi waa “Jama Musse Jama, *Layli Goobalay: Variante Somala del Gioco Nazionale Africano*, Ponte Invisibile Ed. Pisa, 2003. “
- Jama Musse Jama,
The Role of Ethnomathematics in Mathematics Education: Cases from the Horn of Africa, International Reviews on Mathematical Education, ZDM 99/3.