

# How to Make and Install Hungarian Shelves

by [juliofo](#) on August 22, 2005

## Table of Contents

- intro: How to Make and Install Hungarian Shelves ..... 2
- step 1: The model 240 cm by 240 cm ..... 2
- step 2: The materials ..... 3
- step 3: Cut off mortices on sticks and shelves ..... 3
- step 4: Hold vertical sticks on the wall ..... 4
- step 5: Finishing ..... 5
- step 6: Another example ..... 7
- Related Instructables ..... 8
- Advertisements ..... 8
  - Make Magazine Special Offer ..... 8
- Comments ..... 8

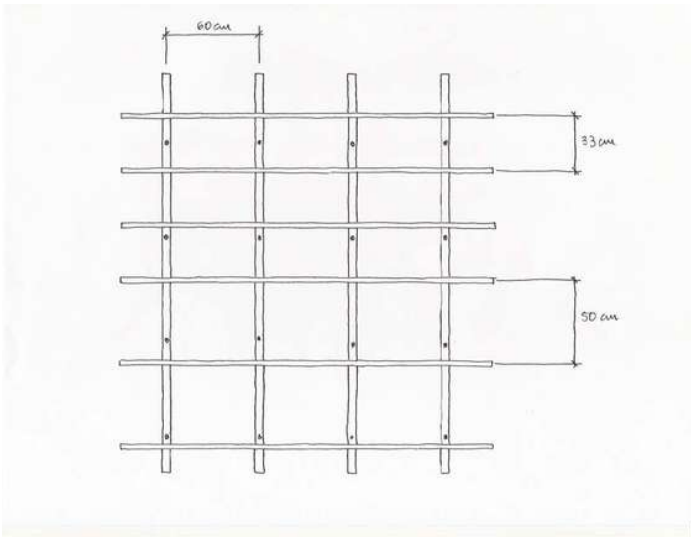
## intro: How to Make and Install Hungarian Shelves

First time I saw these shelves was in Budapest, at a friend's apartment. I was told they had been designed by a physicist. That's why I think they are safe. The ones in the photos have been up for more than a year now.



### step 1: The model 240 cm by 240 cm

This is just one model. You can personalize the design to fit your needs.



## step 2: The materials

For the model showed in Step1 the materials are:

4 sticks of pine of 240 cm by 5 cm by 6 cm (5 is front; 6 is deep) (photo1)

6 shelves of DM of 240 cm by 22 cm by 3 cm (photo2)

4 wall metal peg screws to hold large weigths (one for each stick) (photo3)

12 regular wall plastic peg screws to hold medium weigths (three for each stick) (photo4)



## step 3: Cut off mortices on sticks and shelves

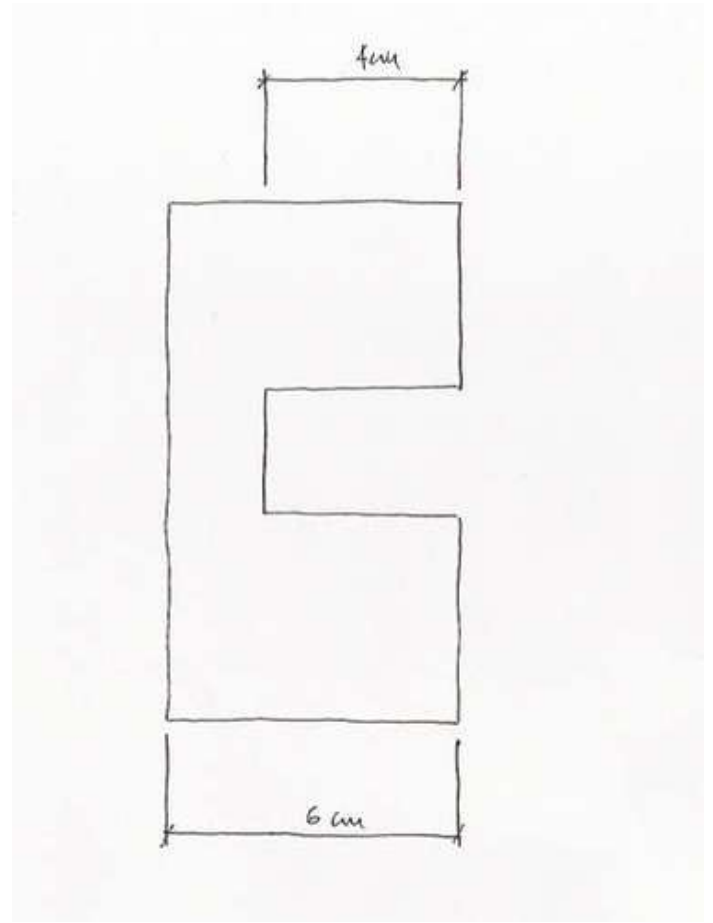
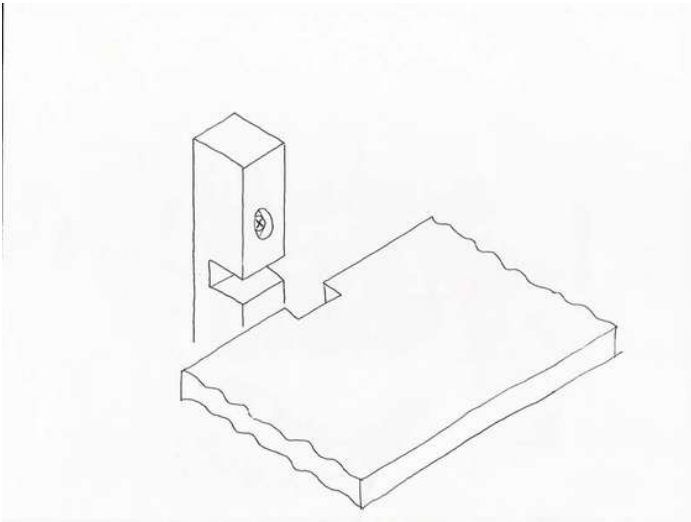
The whole set is assembled like pieces in a puzzle without glue or screws.

In the sticks make a mortice for every shelf.

In the shelves make a mortice for every stick.

In our case this means 6 mortices in each stick and 4 mortices in each shelf.

As a rule, in sticks make a mortice 2/3 deep of the side of the stick and in shelves make a mortice 1/3 deep of the side of the stick. (In the example this means 4 cm in sticks and 2 cm in shelves because the side of the stick is 6 cm).

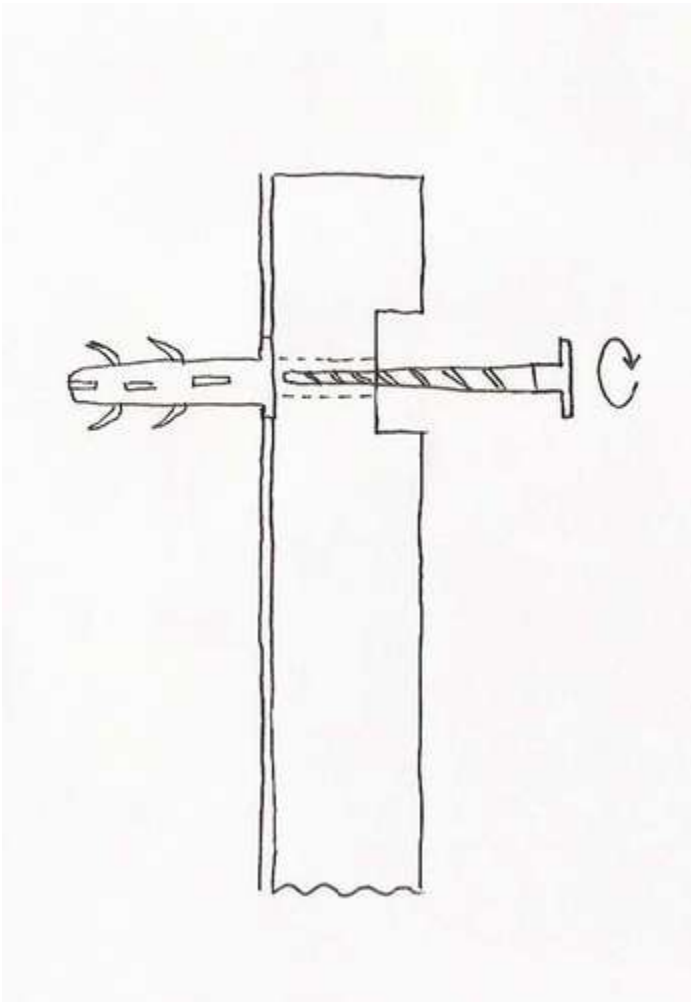


**step 4: Hold vertical sticks on the wall**

Use the strong screw in the middle of the stick.

Check verticality with a bubble level.

Fix the other 3 screws in every stick.



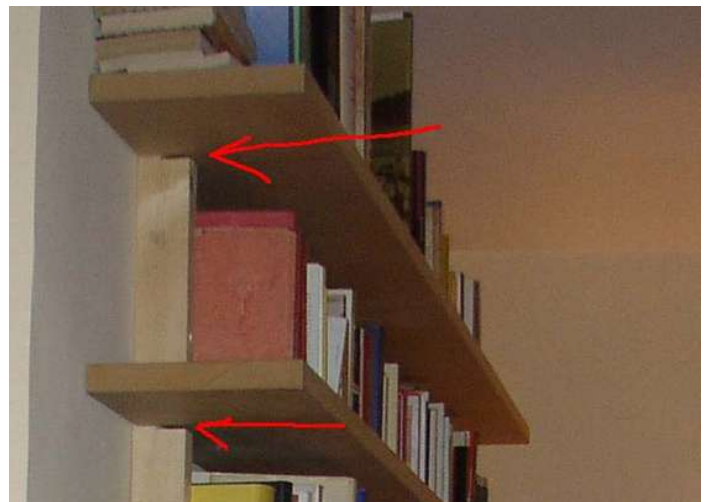
### step 5: Finishing

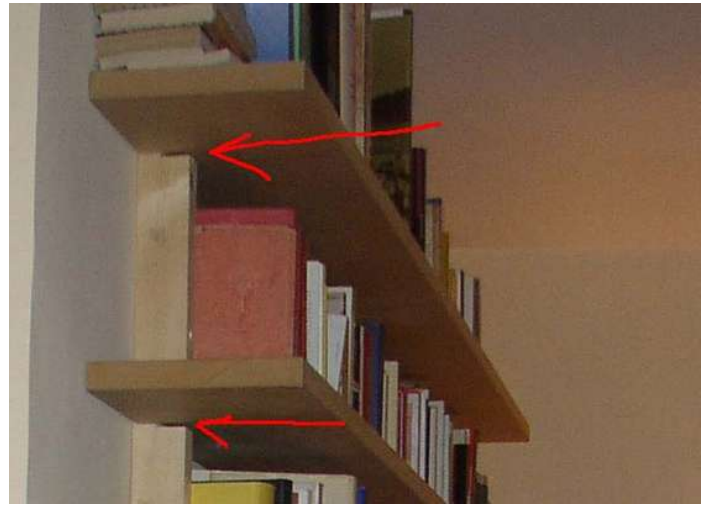
Once all the sticks are on the wall, assemble the shelves and VOILA! you have it done.

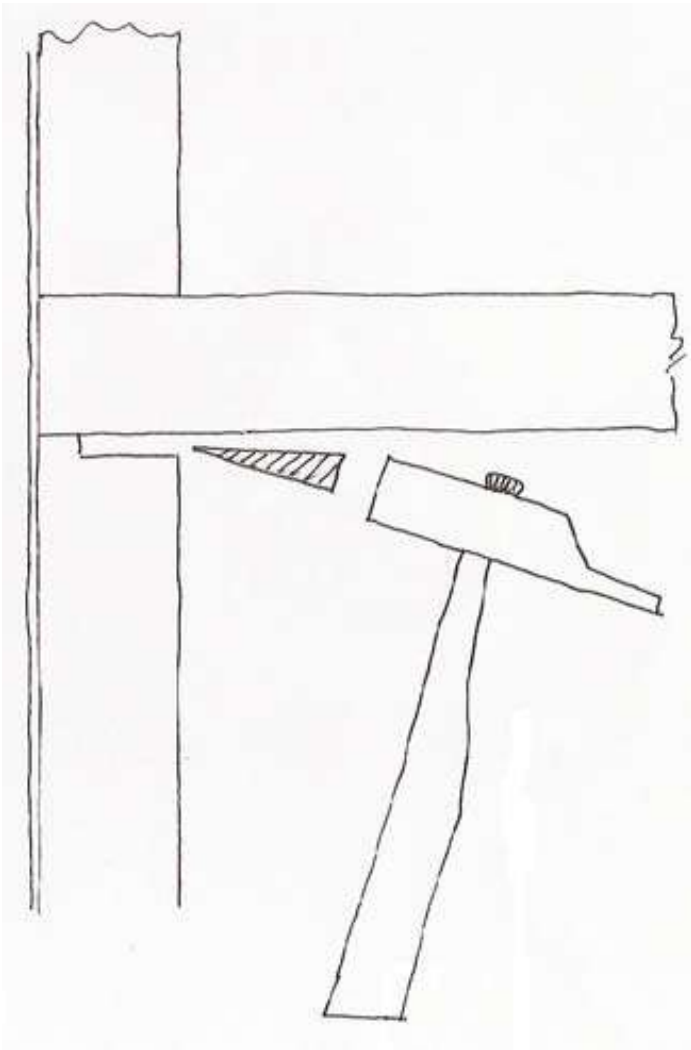
BUT THERE IS STILL ONE MORE THING...

PLEASE DO NOT MISS THIS DETAIL WHETHER YOU THINK IS IMPORTANT OR NOT!

The last thing to do is to insert wedges of wood under all the shelves and in every stick until all the shelves are ortogonal (=perpendicular) (=90 degrees) to the sticks.







### step 6: Another example

This is another one we made for a "used things" shop in our city.

It is 15 meters wide and 2,5 meters high with vertical sticks every 0,5 meters.

It was made with all kind of particles boards we had around.

As it can be seen in the photo it has no mortices in the selves --just in the vertical sticks-- and it works too.







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## Comments

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**tichus** says:

I'm wondering if this design could be modified to a leaning version, and made to be disassembled.

I also need lots of shelves for a hallway that has no children, no pets, and is not owned (no holes for walls).

Mar 27, 2009. 6:32 AM [REPLY](#)



**jernorwood** says:

Thanks for the awesome instructable. I made these shelves for my room in the basement. I'm no carpenter but I really enjoyed making them.

I used a 2x10 that I cut in 4 pieces for the verticals. The shelves are pine planks 1x10s, I think. These sizes are actual, they are labelled that way in the hardware store. (Why is it a 2x4 is actually 1.75x3.5?)

Mar 6, 2009. 9:37 AM [REPLY](#)



**jhliu** says:

Hey, I'm thinking about putting some of these in the kids' playroom for their books, but I wondered how deep everyone's shelves are. I see the original design is only 22cm deep, which is about 8.5", and kid's books tend to be pretty wide.

Has anyone made anything with deeper shelves, say, 12" or so? Do you think that would still hold up, or should I just stick with the shallower ones?

Thanks! It's a fantastic design, and I'm excited about the possibilities...

Mar 2, 2009. 9:34 AM [REPLY](#)





**meritsetgo** says:

any ideas how to cut the mortises so they are square? it does not show how the mortises were cut and it you used a jig or a mortise machine.

Feb 25, 2009. 5:24 PM [REPLY](#)



**LoriLynn** says:

Is the spacing of the verticals important to the weight of things able to be on the shelves? And if so, what is the way to tell how close together they should be?

Apr 2, 2008. 4:58 PM [REPLY](#)



**MairseyDotes** says:

Standard wall studs are spaced at 16-inches center-to-center in the US. That's an excellent distance for the verticals, as well, since nothing will ever be more than 8-inches from a vertical support.

Feb 23, 2009. 4:57 PM [REPLY](#)

I've done extensive remodeling on my 1921-built home; I think Hungarian shelves are going into the Library!



**Re-design** says:

Most building codes allow for 24" o.c. studs. So it might be a good idea to check with a studfinder if hitting the studs are needed.

Feb 24, 2009. 9:12 AM [REPLY](#)



**juliofo** says:

Sorry again. Forget the idea of spacing them 32 inches. It was my fault in translating into centimeters. I would recomend spacing smaller than 20 inches.

Jul 9, 2008. 12:37 PM [REPLY](#)



**juliofo** says:

After daveallen post (thanks! daveallen) I realize i misunderstood your question. I answered the question of spacing mortices on vertical sticks while you were asking about spacing vertical sticks themselves on the wall.

Jul 9, 2008. 12:33 PM [REPLY](#)

I think daveallen is righ. It makes sense to space them on the wall to coincide with studs on a drywall. But you can put them at 32" if more convinient. I think that even should not be a problem to stick "some" uprights on the wall not coincident with a stud if others do coincide. But it is only my guess. Do it at your own risk, all my examples are on masonry wall.



**daveallen** says:

The uprights should be attached to studs within the wall, unless you are building the shelves on a cinderblock/masonry wall. Studs are typically 16" apart center to center; that's what dictated the spacing on the ones I built.

Jul 7, 2008. 3:22 PM [REPLY](#)

Another thing: When I cut the notches in my uprights I lined them all up, strapped them all together, and then made my cuts with a circular saw. That way I could be pretty sure they were all in the right place (plus it saved a lot of time).



**juliofo** says:

Hi LoriLynn

I do think that spacing of the vertical sticks is not important because putting the selves into the mortices "restores" somehow the structure of the vertical stick. But take my reply as a guess, not as an absolute truth. That i can tell you for sure though is that i have made selves spaced 30 cm between selves without any problem.

Apr 3, 2008. 5:20 AM [REPLY](#)



**Tildewave** says:

There is also LDF and HDF (Low and High density respectively) particle board. The difference between LDF, MDF, and HDF is the size of the particles. Smaller particles are more densely packed, and there are more bonds between particles to contribute to strength. A Caution with using particle board is that it can bow(and snap) if too much weight is added, so for a shelf with textbooks (or other heavy shelf worthy things) you could try:

Feb 23, 2009. 8:14 AM [REPLY](#)

- A) Using real wood(wood has a grain which gives a boatload of strength - try bending a box of straws)
- B) Laminating(Glue) two sheets of the particle board together
- C) Laminate two Sheets together, and add a bar of steel(usually sold near the nuts and bolts aisle at Home Depot and Canadian Tire - possibly other hardware stores too). You would have to use a router to create the bevel so that the sheets would be flush, but that would drastically increase the strength along that stretch of the shelf, provided that there are at least 2 joist(vertical) supports across that stretch



**artquilter** says:

I wonder if there's a way to combine this style of shelving with the encyclopedia shelving that's in another instructable. Like maybe putting up more of the 'vertical sticks on the wall' that would accomodate what ever the book length is, as if it were many individual boards instead of one long board for each shelf. And would each book need two 'vertical sticks on the wall' to hold it, or would one 'vertical stick on the wall' in the middle of the book hold it?

Feb 5, 2009. 5:46 PM [REPLY](#)

Or make the 'vertical sticks on the wall' deeper to have more contact with the book for shelf strength?

Except for an issue with the depth of the book, maybe it would be artistically interesting to arrange the books so that it's not always a continuous shelf across, but different length shelves, accomodating different height object?

Of course, first I'd have to find a whole bunch of free encyclopedias.


Hmmm...something to think about as I'm falling asleep tonight!




**lostinthecolonies** says:

bloody brilliant ! have bin looking for a quik and easy yet cool solution for shelving in a hallway and this is the best so far

Dec 2, 2008. 4:53 PM [REPLY](#)


 **medicationreqd** says: Nov 2, 2008. 9:37 AM [REPLY](#)  
nice instructable! i think it would be a good idea to space the vertical strips 16" apart, thereby allowing them to be attached to the wall studs, which would add a lot of strength to the unit.


 **habib** says: Sep 6, 2008. 2:28 AM [REPLY](#)  
great project, i will make one for my books too.


 **mtemple** says: Jul 26, 2008. 10:20 AM [REPLY](#)  
Thanks so much for posting this instructable! I spent the past few weekends building these for my wife. I think they turned out pretty well and now we have a place for our books!


 **mtemple** says: Jul 26, 2008. 10:24 AM [REPLY](#)  
Here are some pictures...




 **daveallen** says: Aug 1, 2008. 10:17 AM [REPLY](#)  
mtemple: nice job! in fact, they look so much like the ones I made I thought they were my pictures for a second! I also tapered the tops and bottoms of my uprights to try to look nice and to fit in with my slanted ceiling, but I just used an orbital sander (no router available). We also need new shelves but I'm afraid we're out of wall space... I suppose I'll have to...sigh...sell some books.

 **mtemple** says: Aug 2, 2008. 10:42 PM [REPLY](#)  
Your project inspired me! I had a really good time building these shelves. Thanks for some great ideas :)

 **juliofo** says: Jul 26, 2008. 2:50 PM [REPLY](#)  
Hi mtemple,  
Wonderful work! I specially like the way you solved the verticals not to conflict with the moldure (please help me with this word) on the ceiling.  
Thanx for posting the photos.  
On the basis of photo 3 you need to start some more because there is no much room left.  
Why for your wife? Dont you share the books?

 **mtemple** says: Jul 26, 2008. 3:02 PM [REPLY](#)  
I used the same paint for the shelves that is on the "crown molding" and used a router on the uprights to bevel the edges. This gave them more of a "finished" look.  
  
Yes we share the books and yes we need more shelves already :)

 **juliofo** says: Jul 27, 2008. 8:41 AM [REPLY](#)  
Thanks for the linguistic help! As you can guess crown molding = MOLDURA (in spanish).

 **frogs** says:  
My wife found your plans online last week so she decided it was time for me to get busy. Since the 4th of July was on Wednesday and I didn't Our vertical supports are made from 2" x 3" 8' long "studs" (pine or fir, not sure which). The shelves were all cut from one 15/32" 4' x 8' We purchased all our supplies on Wednesday afternoon. On Thursday we used a stud finder to located the wall studs and then we figured out th On Friday after several trips up and down the stairs to check and adjust the fit of all supports and shelves it was time for finishing. All Saturday morning I applied the last coat of polyurethane to the shelves. Saturday afternoon I installed the vertical supports and after the So with in 5 days, (3 days of actual construction time) the shelves were finished and books organized. We only spent \$60 on 6 2 x 3 studs, 1 This is a wonderful project, quick and easy build! Thanks a bunch.  
  
I have enclosed photos of the before during and after the project was finished. I also took a close up of the way the shim is installed. As



**hernanai** says:  
Holy S\*\*\*! TURNED OUT GREAT!!!

Jun 18, 2008. 6:40 PM [REPLY](#)



**sensoryhouse** says:  
Awesome shelving unit  
although your text is totally tweeking this page out. HAHAH!

Jan 28, 2008. 8:50 PM [REPLY](#)



**juliofo** says:  
Hi Frogs,  
Well done!!! Wonderful design!  
I am happy you found the instructable...  
(BTW, these instructables people do a very good work with this site that we all should thank very much).  
Thanks you for sharing your experience including photos.

Jul 9, 2007. 3:27 PM [REPLY](#)



**gpurcell** says:  
Thanks for the inspiration! I made these shelves based on the idea from the OP:

Jun 3, 2008. 3:08 PM [REPLY](#)



**gpurcell** says:  
I used 8' 1x3 oak planks for the rails. Cut the notches for the seven shelves at the same time. Then I used 4' oak stair treads for the shelves. I decided to make the shims part of the design, so they are finished along with the rest of the wood. Everything is covered in two coats of amber shellac.

Jun 3, 2008. 3:13 PM [REPLY](#)

Wood cost me about \$200, whole project took four days going slowly and deliberately. If I had a proper wood shop with a router and such I could have done it in half the time.



**gpurcell** says:  
Here's the picture

Jun 3, 2008. 3:10 PM [REPLY](#)



**hernanai** says:  
Gorgeous...

Jun 18, 2008. 6:38 PM [REPLY](#)



**SarahEve** says:  
Hello, I just moved back into my parents house after graduating from college and I am completely redesigning my bedroom. I know I want and need to put up shelves for all my books and miscellaneous items.  
I love your design, but I'm just wondering about it's weight capacity. I have 2 leopard geckos in a 30 gallon tank, which weighs about 25 pounds. Do you the shelf will be able to hold that much weight? (A shelf full of books must weight more than 25 pounds..)  
Any comments or suggestions?

May 20, 2008. 6:52 AM [REPLY](#)

Thanks :)



**Insaneisfun** says:

It should I had 30 lb. in hardcovers on mine.

May 28, 2008. 2:58 PM [REPLY](#)



**WrenchingPilot** says:

Thanks for the instructable.

Mar 15, 2008. 5:12 PM [REPLY](#)

I just put up my own set.

I used 2"x3" softwood (pine) boards for the vertical members, and 3/4" oak plywood, banded with 1/4" thick oak trim for the horizontal shelves. The vertical pieces were painted with white semi-gloss latex paint (matchign the trim in the room) and the shelves were finished with a red oak stain and 3 coats of polyurethane.



**scmtngirl** says:

that looks fantastic with the vertical pieces painted white and shelves stained dark... nice job.

May 15, 2008. 2:45 PM [REPLY](#)



**hogzilla** says:

I am REALLY looking forward to trying this in my garage and if that goes like I expect it to I have PLENTY of wall in my house to fill!!!! THANK-YOU!!

May 3, 2008. 6:34 PM [REPLY](#)



**Balaszi** says:

I'm new to woodworking and would like to try making these shelves, as they seen pretty simple. I was wondering how you cut the mortices so cleanly, especially on the vertical supports. I have cordless jig and circular saws I'm able to get a hold of, can it be done with them?  
Thanks! Great instructable!

May 3, 2008. 4:00 PM [REPLY](#)



**ysabet** says:

Years ago I picked up a set of 4 shelves fixed to wooden supports at a thrift-shop in Tucson AZ; they were battered and elderly, but a little sanding and some paint made them look pretty good and I mounted them over the toilet. I didn't realize until I read this article what they were, but sure enough, that's how they're constructed (only the shelves were mounted permanently into the mortices as a single unit.) They've held up to my cats climbing on them, large rocks being displayed on them, heavy pottery, books, jars of beach-sand and shells (I have a fairly odd bathroom) and lots of other stuff; damn good design. Think it's time to make some myself now. Thanks for the write-up!

Apr 17, 2008. 11:28 AM [REPLY](#)



**Greenehouse** says:

Great idea. I think I will use a smaller, modified version for a DVD holder. I would think your "wedges" are OK and won't compress much because the wood grain is perpendicular to the grain in the wall uprights. Thanks.

Apr 7, 2008. 7:34 AM [REPLY](#)



**jeff-o** says:

Did you specifically choose softwood for the vertical supports, or would anything work? I wonder if hardwood (like oak) would be safer/more durable.

Apr 3, 2008. 7:36 AM [REPLY](#)



**juliofo** says:

Hi jeff-o,

Anything will work. I chose softwood because I were short of money the first time I did it but the ones in the photo of step6 are made with some redwood much stronger and dense. For sure oak will last longer and will give a much more beauty look to your selves.

Apr 3, 2008. 11:27 AM [REPLY](#)

Good luck! and post the results.



**Mr. Rig It** says:

Would love to see you add this to my new group.  
Hope to see you there.  
Home Repair, Refurbishment, and New Projects

Mar 23, 2008. 12:57 PM [REPLY](#)



**Treelan** says:

This looks great! And kudos on the awesome drawings, they are very clear.

Mar 21, 2008. 12:24 PM [REPLY](#)



**JerryMopar** says:

I was looking to build a new shelf, the one I made before is just too rickety.

Plus, this has a Mid-century Modern vibe to it!! One more reason for me to like

Mar 15, 2008. 5:37 PM [REPLY](#)



**raincntry** says:

I am excited to try making these shelves. Thank you for posting the designs and pics.

Mar 10, 2008. 3:23 AM [REPLY](#)



**cookiemonster78** says:

Hello, I'm in the midst of this project and had a few observations/questions. I may be wrong, but I think it was Eric that mentioned putting the vertical beams together to make sure the notches are all square? An excellent idea (before they go to the wall). I was actually about to consider mounting them first and hoping that my measurements/saw cuts were all within range, but I was off by as much as 1/16"-1/8" on some of my cuts due to an unwieldy saw. Now I can still take his recommendation (even the notches) and simply make the wedge slightly bigger if need be.

This is one of my 1st projects involving staining/varnishing as opposed to rough timber - Do any of you have any hints/tips for the initial placement of the horizontal shelving into the vertical notches? (once the vertical studs are already in place). At this point I'm almost finished staining my wood, but am wanting some pointers on how to avoid jostling my wood too much or marring it if I decided to add varnish first. I opted NOT to cut mortices into the shelves themselves, only into the verticals. Thanks in advance

Feb 29, 2008. 9:05 AM [REPLY](#)



**SWV1787** says:

I like this, simple, elegant, and easy to build. I think I will try this in my basement. Do you know what the weight limit its???

Feb 3, 2008. 2:12 PM [REPLY](#)



**juliofo** says:

As i said to CoolKoon (coment next to you) i haven't measured with a test the weigth they can resist. But if you are thinking them not for paper you can calculate a number weigthing and measuring a big book; a mean one filling completely up the space among selves. I am pretty sure this number will be "safe".

Feb 3, 2008. 3:33 PM [REPLY](#)



**CoolKoon** says:

Hungarian shelves? ROFL

That's pretty funny, especially since I haven't seen any shelf like that neither in Budapest not in any other Hungarian city. I haven't found it in IKEA either (probably because I wasn't looking hard enough, or it was way too expensive and I just ignored it). However I have two questions: why did you come to Budapest? And BTW those shelves look like they rely on those little wooden pegs for support. How much weight do they support without breaking off?

Feb 3, 2008. 1:35 PM [REPLY](#)



**juliofo** says:

It was very long ago, back in the early ninties. I went to a meeting at the university and a professor i had relationship with offered me to be at his apartment. There i saw these selves and he told me they were designed by a friend of him that was physicist.

I haven't doone any test by i am pretty sure that you can fill them up with paper and they will resist.

The pegs among mortices do not break because mortices are filled with the wood of the selve itself. That way the the vertical sticks "are reconstructed in their vertical strength" when ensambled with selves.

Feb 3, 2008. 3:29 PM [REPLY](#)

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