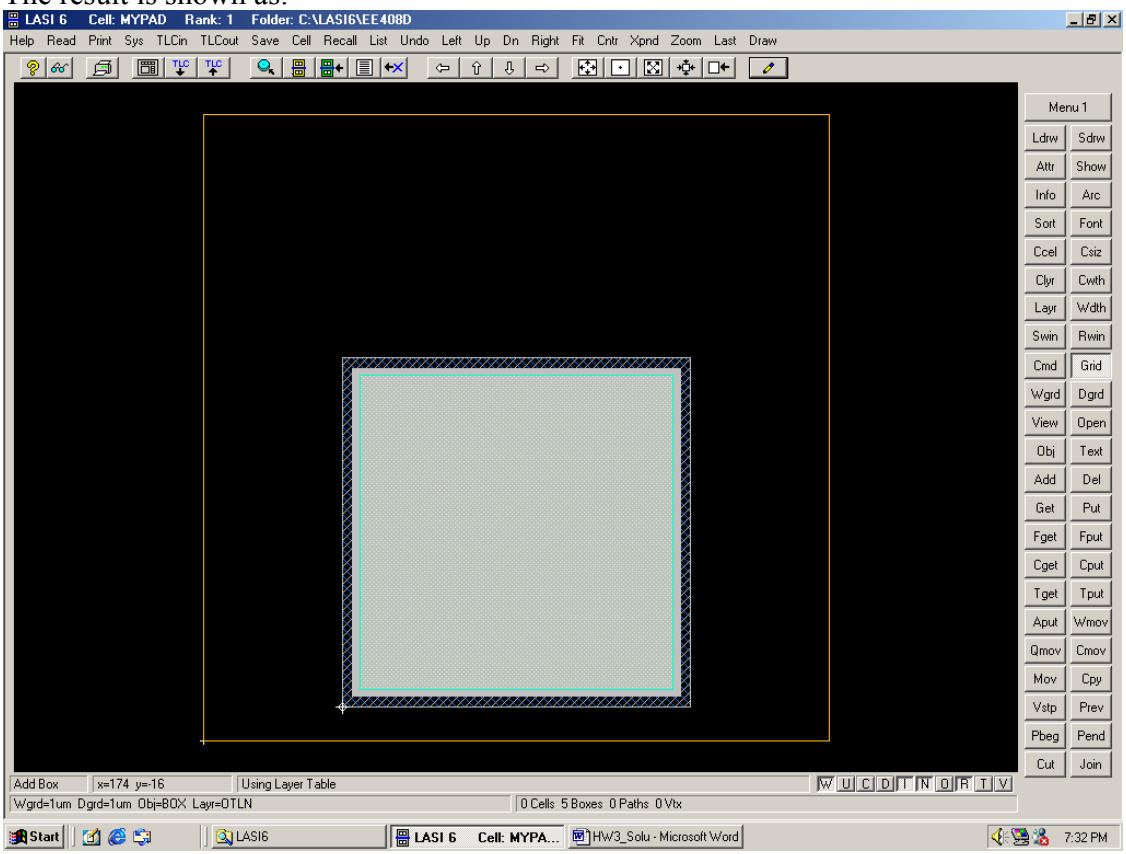
HW3_SOLUTION Spring 20003

Problem 3.1

Creat Cell, name=MyPAD; Rank=1.
Procedures to build the cell:

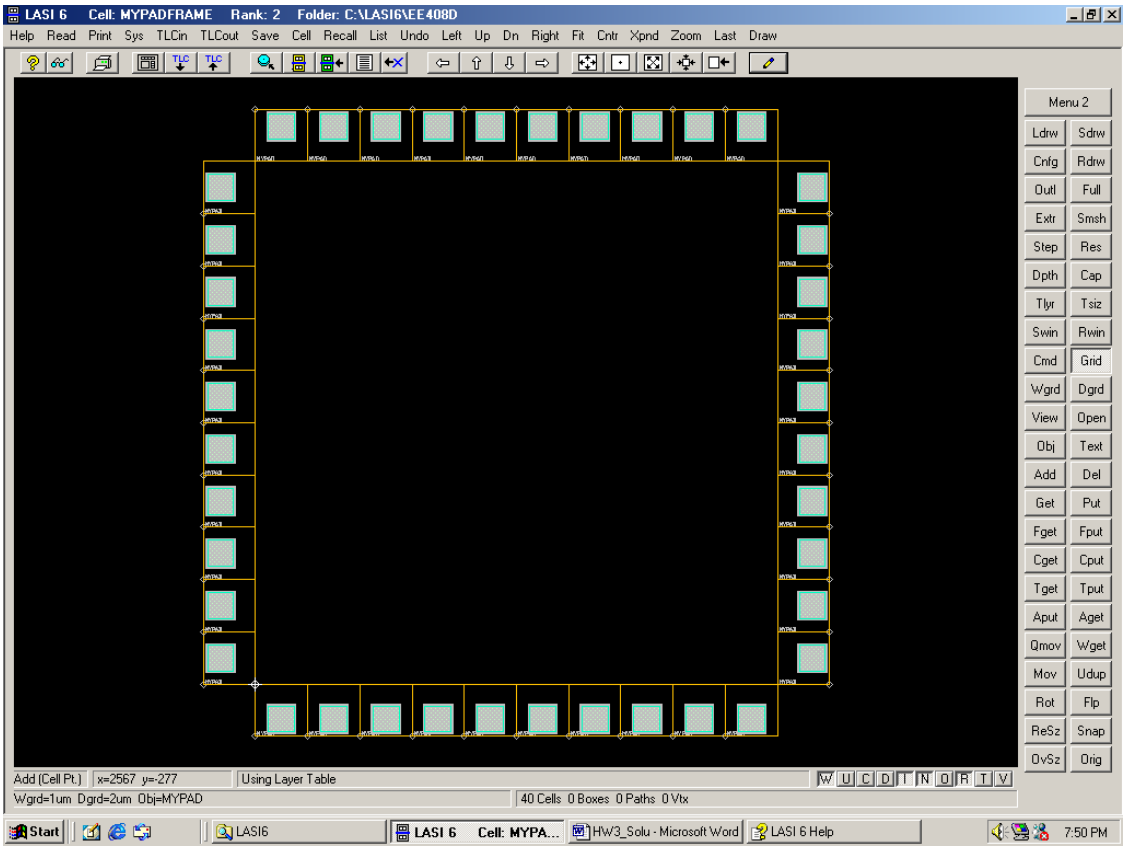
	Layr	Size (um*um)	Obj	Rule
Metal1	Metal1	100*100	BOX	
Via	VIA	94*94	BOX	>=3um to Metl1 edge
Metal2	Metal2	100*100	BOX	
OverGlass	OVGL	90*90	BOX	Exactly5um to Metl 1 edge
Outline	OTLN	180*180, also refer book Fig 3.7 for detail of its position	BOX	make sure the distance between pads >75um

The result is shown as:



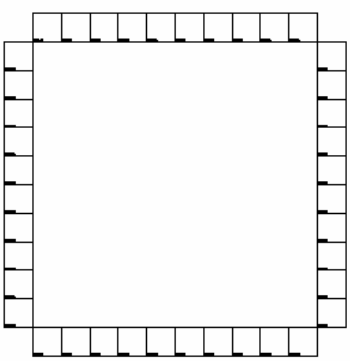
Then, we will Layout our PADFRAME.
Create a new cell, name= MyPDFRAME, RANK=2
Obj=MyPAD, add them one by one according to specific positions in the design(according to Fig.3.6). Click keyboard x or y will pop up a window to let you input the position, which might be helpful in the problem.

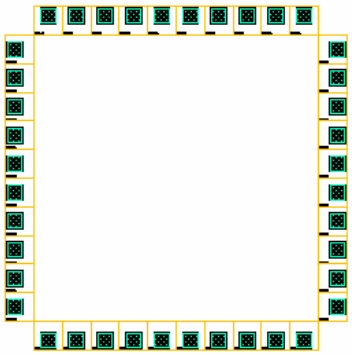
Also notice for some cell, we need to rotate or flip our cell in order to get the Fig.3.6. Please review the Help file of COMMAND in “Rot” and “Flip” to find how to use this function.
The result looks like:



Also, since we are not measuring anything for this problem, you could also chose to print to clipboard instead of printscreen, to save your ink of the printer *_^.

By changing the button in the menu from full to Outl, you can show the outline or the full lay out on your screen. Enjoy it..





Problem 3.6

Consider only the plate capacitance, assume the area of metal1 and metal 2 is Aμm^2. The capacitance between metal1 and metal2 is 38AaF, and capacitance between metal1 and substrate is 26AaF. The voltage change on metal1 = 1V × (38AaF/(38A+26A)aF) ≈ **0.594V**

Problem 3.7

Ans: Taking Jal = 1mA/um. The maximum xurrent = 5 um x 1mA/um =5 mA. The limitation = 5 mA/(0.4 mA/contact) = 12.5 =>> 13 contact needed.

Problem 3.9

The inductance of a 4μm wide piece of metal2 is

L(nH/mm) = 1.25 / (4/1.5 + 1.393 + 0.667×ln(4/1.5+1.44) ≈ **0.25nH/mm**

P3.10