

# Dec 3 - Sharing the fabric

```
In[1]:= SetDirectory[NotebookDirectory[]];

In[2]:= (data = ReadList["input.txt", String]) ~Take~10

Out[2]:= {#1 @ 108,350: 22x29, #2 @ 370,638: 13x12, #3 @ 242,156: 26x23,
          #4 @ 638,540: 14x27, #5 @ 8,793: 24x29, #6 @ 158,828: 15x15, #7 @ 103,549: 22x26,
          #8 @ 942,637: 15x15, #9 @ 405,628: 19x11, #10 @ 419,259: 18x12}

In[3]:= toExp[list_] := Join[list~Take~1, ToExpression[list~Drop~1]]

In[4]:= (data2 = toExp[StringSplit[#, {"@", ",", ":", "x"}]] & /@ data) ~Take~2

Out[4]:= {{#1 , 108, 350, 22, 29}, {#2 , 370, 638, 13, 12}}

In[5]:= Clear[m]

In[6]:= m[_ , _] = 0;

In[7]:= Do[
  Do[m[i, j] += 1,
    {i, p[[2]], p[[2]] + p[[4]] - 1},
    {j, p[[3]], p[[3]] + p[[5]] - 1}],
  {p, data2}]

In[8]:= imax = Max[#[[2]] + #[[4]] & /@ data2];

In[9]:= jmax = Max[#[[3]] + #[[5]] & /@ data2];

In[10]:= sum = 0;

In[11]:= Do[If[m[i, j] ≥ 2, sum += 1], {i, 0, imax}, {j, 0, jmax}]

In[12]:= sum

Out[12]:= 107 663
```

## Alternative version - efficient for large fabrics

```
In[13]:= Clear[seen]

In[14]:= seen[_ , _] = False;

In[15]:= sum2 = 0;
```

```

In[16]:= Do[
  Do[If[! seen[i, j] && m[i, j] ≥ 2, sum2 += 1; seen[i, j] = True],
    {i, p[[2]], p[[2]] + p[[4]] - 1},
    {j, p[[3]], p[[3]] + p[[5]] - 1}
  ],
  {p, data2}]

In[17]:= sum2
Out[17]= 107 663

```

## Part 2 - find the patch that has all ones

```

In[18]:= testPatch[p_] := And@@Flatten[
  Table[m[i, j] == 1,
    {i, p[[2]], p[[2]] + p[[4]] - 1},
    {j, p[[3]], p[[3]] + p[[5]] - 1}
  ]
]

In[19]:= Do[
  If[testPatch[p], Print[p]],
  {p, data2}
]

{1166 , 126, 200, 10, 11}

```