
/*

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U096901R

Problem Set 3 Problem 1

beside(Image1, Image2)
side by side, horizontal 50%

rotate(Image)
rotate 90° clockwise

scale(Image)
scale by 50% horizontal only, vertical 100%

All input/resulting images are 640x640

*/

```
montage(Expr, Out) :-  
    atom(Expr),  
    scale(Expr, 100, 100, Out),  
    !.
```

```
montage(Expr, Out) :-  
    Expr =.. [rotate, Arg1],  
    atom(Arg1),  
    r(Arg1, Out),  
    !.
```

```
montage(Expr, Out) :-  
    Expr =.. [rotate, Arg1],  
    atom_concat(Out, '3', Out1),  
    montage(Arg1, Out1),  
    r(Out1, Out),  
    !.
```

```
montage(Expr, Out) :-  
    Expr =.. [beside, Arg1, Arg2],  
    atom(Arg1), atom(Arg2),  
    b(Arg1, Arg2, Out),  
    !.
```

```
montage(Expr, Out) :-  
    Expr =.. [beside, Arg1, Arg2],
```

```
atom_concat(Out, '4', Out1),
atom_concat(Out, '5', Out2),
montage(Arg1, Out1),
montage(Arg2, Out2),
b(Out1, Out2, Out),
!.
```

```
b(Arg1, Arg2, Out) :-
    atom(Arg1), atom(Arg2),
    atom_concat(Out, '1', Out1),
    atom_concat(Out, '2', Out2),
    scale(Arg1, 50, 100, Out1),
    scale(Arg2, 50, 100, Out2),
    write('convert +append '),
    write(Out1), write('.jpg '),
    write(Out2), write('.jpg '),
    write(Out), write('.jpg'),
    writeln(''),
    !.
```

```
r(Arg1, Out) :-
    atom(Arg1),
    write('convert -rotate 90 '),
    write(Arg1), write('.jpg '),
    write(Out), write('.jpg '),
    writeln(''),
    !.
```

```
scale(Arg1, Width, Height, Out) :-
    atom(Arg1),
    write('convert -scale '),
    write(Width), write('%%x'),
    write(Height), write('%% '),
    write(Arg1), write('.jpg '),
    write(Out), write('.jpg'),
    writeln(''),
    !.
```

```
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```

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Problem Set 3 Problem 2

*/

```
ma(Expr) :-  
    Expr =.. [;, Left, Right],  
    Left =.. [=, X, Cmd],  
    montage(Cmd, X),  
    ma(Right),  
    !.
```

```
ma(Expr) :-  
    Expr =.. [=, X, Cmd],  
    montage(Cmd, X),  
    !.
```

```
montage(Expr, Out) :-  
    atom(Expr),  
    scale(Expr, 100, 100, Out),  
    !.
```

```
montage(Expr, Out) :-  
    Expr =.. [rotate, Arg1],  
    atom(Arg1),  
    r(Arg1, Out),  
    !.
```

```
montage(Expr, Out) :-  
    Expr =.. [rotate, Arg1],  
    atom_concat(Out, '3', Out1),  
    montage(Arg1, Out1),  
    r(Out1, Out),  
    !.
```

```
montage(Expr, Out) :-  
    Expr =.. [beside, Arg1, Arg2],  
    atom(Arg1), atom(Arg2),  
    b(Arg1, Arg2, Out),  
    !.
```

```
montage(Expr, Out) :-  
    Expr =.. [beside, Arg1, Arg2],  
    atom_concat(Out, '4', Out1),  
    atom_concat(Out, '5', Out2),
```

```
montage(Arg1, Out1),
montage(Arg2, Out2),
b(Out1, Out2, Out),
!.
```

```
b(Arg1, Arg2, Out) :-
    atom(Arg1), atom(Arg2),
    atom_concat(Out, '1', Out1),
    atom_concat(Out, '2', Out2),
    scale(Arg1, 50, 100, Out1),
    scale(Arg2, 50, 100, Out2),
    write('convert +append '),
    write(Out1), write('.jpg '),
    write(Out2), write('.jpg '),
    write(Out), write('.jpg'),
    writeln(''),
    !.
```

```
r(Arg1, Out) :-
    atom(Arg1),
    write('convert -rotate 90 '),
    write(Arg1), write('.jpg '),
    write(Out), write('.jpg '),
    writeln(''),
    !.
```

```
scale(Arg1, Width, Height, Out) :-
    atom(Arg1),
    write('convert -scale '),
    write(Width), write('%%x'),
    write(Height), write('%% '),
    write(Arg1), write('.jpg '),
    write(Out), write('.jpg'),
    writeln(''),
    !.
```

```
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```

Problem Set 3 Problem 3

*/

```
tile(0, In, Out) :-  
    scale(In, 100, 100, Out),  
    !.
```

```
tile(N, In, Out) :-  
    N1 is N-1,  
    atom_concat(Out, 't1', Out1),  
    tile(N1, In, Out1),  
    s(Out1, In, Out),  
    !.
```

% In and Add assumed same size

% Will put them together and when done, reduce size to In.

```
s(In, Add, Out) :-  
    atom_concat(Out, 's1', Out1),  
    atom_concat(Out, 's2', Out2),  
    atom_concat(Out, 's3', Out3),  
    r(In, Out1),  
    r(Out1, Out2),  
    r(Out2, Out3),  
    atom_concat(Out, 's4', Out4),  
    atom_concat(Out, 's5', Out5),  
    atom_concat(Out, 's6', Out6),  
    atom_concat(Out, 's7', Out7),  
    atom_concat(Out, 's8', Out8),  
    r(Add, Out4),  
    r(Out4, Out5),  
    r(Out5, Out6),  
    b(Out3, Out5, Out7),  
    b(Add, Out4, Out8),  
    atom_concat(Out, 's9', Out9),  
    atom_concat(Out, 's10', Out10),  
    atom_concat(Out, 's11', Out11),  
    r(Out7, Out9),  
    r(Out8, Out10),  
    b(Out9, Out10, Out11),  
    scale(Out11, 50, 50, Out),  
    !.
```

```
b(Arg1, Arg2, Out) :-  
    atom(Arg1), atom(Arg2),  
    write('convert +append '),  
    write(Arg1), write('.jpg '),
```

```
write(Arg2), write('.jpg '),
write(Out), write('.jpg'),
writeln(''),
!.
```

```
r(Arg1, Out) :-
  atom(Arg1),
  write('convert -rotate 90 '),
  write(Arg1), write('.jpg '),
  write(Out), write('.jpg '),
  writeln(''),
  !.
```

```
scale(Arg1, Width, Height, Out) :-
  atom(Arg1),
  write('convert -scale '),
  write(Width), write('%%x'),
  write(Height), write('%% '),
  write(Arg1), write('.jpg '),
  write(Out), write('.jpg'),
  writeln(''),
  !.
```