```
saved loadcol.jl
```

project_3

- graph loader/converter for dimacs `col` format: `loadcol`
  - the `tolg` parameter for converting the data into the default `lg` format
- the data is from Michael Trick's page
- dimacs is an old/simple format described here

```
1  begin
2
3  md"""
4  #### project_3
5  * graph loader/converter for dimacs `col` format: `loadcol`
6    * the `tolg` parameter for converting the data into the default `lg` format
7  * the data is from [Michael Trick's page](https://mat.gsia.cmu.edu/COLOR
   /instances.html)
8  * dimacs is an old/simple format described [here](https://mat.gsia.cmu.edu/COLOR
   /general/ccformat.ps)"""
9
10 end
```

```
  Activating new project at `~/Asztal/git/plnotebooks/loadcol`
   Resolving package versions...
    Updating `~/Asztal/git/plnotebooks/loadcol/Project.toml`
  [86223c79] + Graphs v1.8.0
    Updating `~/Asztal/git/plnotebooks/loadcol/Manifest.toml`
  [ec485272] + ArnoldiMethod v0.2.0
  [34da2185] + Compat v4.7.0
  [864edb3b] + DataStructures v0.18.14
  [86223c79] + Graphs v1.8.0
  [d25df0c9] + Inflate v0.1.3
  [1914dd2f] + MacroTools v0.5.10
  [bac558e1] + OrderedCollections v1.6.0
  [699a6c99] + SimpleTraits v0.9.4
  [90137ffa] + StaticArrays v1.6.0
  [1e83bf80] + StaticArraysCore v1.4.0
  [0dad84c5] + ArgTools v1.1.1
  [56f22d72] + Artifacts
  [2a0f44e3] + Base64
  [ade2ca70] + Dates
  [8ba89e20] + Distributed
  [f43a241f] + Downloads v1.6.0
  [7b1f6079] + FileWatching
  [b77e0a4c] + InteractiveUtils
  [b27032c2] + LibCURL v0.6.3
  [76f85450] + LibGit2
  [8f399da3] + Libdl
  [37e2e46d] + LinearAlgebra
  [56ddb016] + Logging
  [d6f4376e] + Markdown
  [a63ad114] + Mmap
  [ca575930] + NetworkOptions v1.2.0
  [44cfe95a] + Pkg v1.9.0
```

```
loadcol (generic function with 1 method)
```

```
#--->loadcol

# .col extension is a must
function loadcol(gfile::String; tolg=false, toopt=false)
    _e(msg)=error("loadcol: $(msg)")

    !isfile(gfile) && _e("no such file")
    sfile=split(gfile,'.')
    (sfile[end]!="col") && _e("wrong extension")
    gstring=split(read(gfile,String),'\n',keepempty=false)

    num_colors=-1
    E=[]
    nV,nE,tV=-1,-1,-1
    for line in gstring
        sline=split(line,keepempty=false)
        (sline[1]=="c") && continue

        if sline[1]=="p" # only the last counts, but must precede the first 'p' line, bcos it  is used in a sanity check
            nV,nE=parse.(Int,sline[3:end])
            continue
        end
        if sline[1]=="e"
            a,b=parse.(Int,split(line)[2:end])
            if a<1 || a>nV || b<1 || b>nV
                _e("vertex is out of range")
            end
            push!(E,(a,b))
            continue
        end
        if sline[1]=="num_colors"
            num_colors=parse(Int,sline[2])
            continue
        end
    end
    if nV<0 || nE<0 || length(E)!=nE
        _e("wrong data")
    end
    G=Graph()
    add_vertices!(G,nV)
    for (a,b) in E
        add_edge!(G,a,b)
    end
    if tolg==true
        sfile=join(sfile[1:end-1],'.')
        savegraph("$(sfile).lg",G)
        printstyled(stderr,"saved $(sfile).lg\n"; color=:green)
    end
    if num_colors>0 && toopt==true
        open("$(sfile).opt","w") do f
            println(f,num_colors)
        end
        printstyled(stderr,"saved $(sfile).opt\n"; color=:yellow)
    end
    G
end
```

```
#--->loadcol
```

```
#### convert the col's to lg's
for f in readdir("col-instances/"; join=true)
    sf=split(f,'.')
    if sf[end]=="col"
        jf=join(sf[1:end-1],'.')
        isfile("$(jf).lg") && isfile("$(jf).opt") && continue
        loadcol(f; tolg=true, toopt=true)
    end
end
```

```
begin

# test
include("../shared/graphcol_bt.jl")
G=loadgraph("../data/col-instances/queen5_5.lg")
opt=parse(Int,read("../data/col-instances/queen5_5.opt",String))
@time graphcol_bt(G,opt-1)|>println
@time graphcol_bt(G,opt)|>println
@time greedy_color(G,reps=33)|>println

end
```

```
(num_colors = -1, colors = nothing)
  0.119044 seconds (68.51 k allocations: 4.903 MiB, 99.82% compilation tim
e)
(num_colors = 5, colors = [1, 2, 3, 4, 5, 3, 4, 5, 1, 2  …  2, 3, 4, 5, 1,
4, 5, 1, 2, 3])
  0.000613 seconds (895 allocations: 34.469 KiB)
Graphs.Coloring{Int64}(5, [3, 2, 5, 1, 4, 1, 4, 3, 2, 5  …  4, 3, 2, 5, 1,
5, 1, 4, 3, 2])
  0.000949 seconds (1.73 k allocations: 102.711 KiB)
```