IDO- Question 1

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```julia
using JuMP, HiGHS
model = Model(HiGHS.Optimizer)
@variable(model, x[1:15], Bin)
@variable(model, y >= 0)

@objective(model, Min, y)

@constraint(model, 2*sum(x) + y  == 15)


optimization_result = optimize!(model)
```

```
Running HiGHS 1.6.0: Copyright (c) 2023 HiGHS under MIT licence terms
Presolving model
1 rows, 16 cols, 16 nonzeros
0 rows, 1 cols, 0 nonzeros
0 rows, 0 cols, 0 nonzeros
Presolve: Optimal

Solving report
  Status              Optimal
  Primal bound        1
  Dual bound          1
  Gap                 0% (tolerance: 0.01%)
  Solution status     feasible
                      1 (objective)
                      0 (bound viol.)
                      0 (int. viol.)
                      0 (row viol.)
```

```
  Timing            0.00 (total)
                    0.00 (presolve)
                    0.00 (postsolve)
  Nodes             0
  LP iterations     0 (total)
                    0 (strong br.)
                    0 (separation)
                    0 (heuristics)
```

```
@time optimize!(model)
```

```
Presolving model
1 rows, 16 cols, 16 nonzeros
0 rows, 1 cols, 0 nonzeros
0 rows, 0 cols, 0 nonzeros
Presolve: Optimal

Solving report
  Status            Optimal
  Primal bound      1
  Dual bound        1
  Gap               0% (tolerance: 0.01%)
  Solution status   feasible
                    1 (objective)
                    0 (bound viol.)
                    0 (int. viol.)
                    0 (row viol.)
  Timing            0.00 (total)
                    0.00 (presolve)
                    0.00 (postsolve)
  Nodes             0
  LP iterations     0 (total)
                    0 (strong br.)
                    0 (separation)
                    0 (heuristics)
  0.000196 seconds (2 allocations: 32 bytes)
```

```
value.(x)
```

```
15-element Vector{Float64}:
```

```
0.0
0.0
0.0
0.0
0.0
0.0
0.0
0.0
1.0
1.0
1.0
1.0
1.0
1.0
1.0
```

value.(y)

```
1.0
```