Presentation of lab work

lab 3

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Introductory

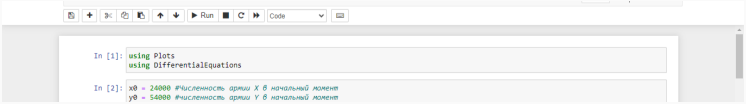
Goals and tasks

- Modeling troop numbers between rivals using a time function.
- In my assignment, I was asked to build graphs of changes in the number of troops of Army X and Army Y for following cases:
  1. Model of combat operations between regular troops
  2. Model of combat operations with the participation of regular troops and partisan detachments

Results

First task

- We used The library Plots and DifferentialEquations



Second task

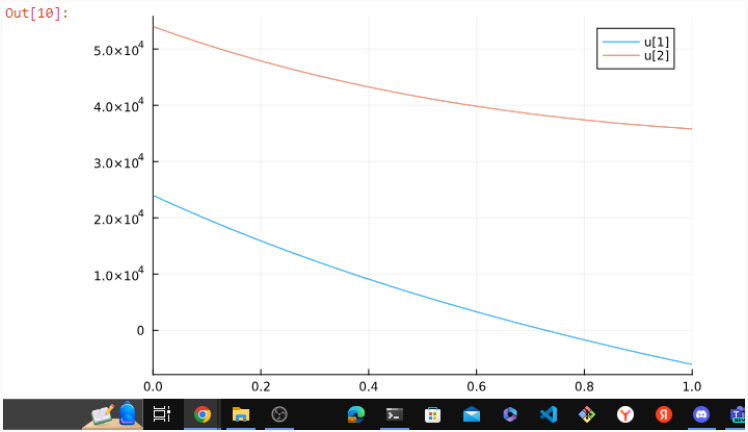
- Model of combat operations between regular troops

Out[2]: Q2 (generic function with 1 method)

In [9]:
```
#Модель боевых действий между регулярными войсками
function f!(du, u, p, t)
    du[1] = -a*u[1]-b*u[2]+P(t)
    du[2] = -c*u[1]-h*u[2]+Q(t)
end
```

Out[9]: f! (generic function with 1 method)

First graph



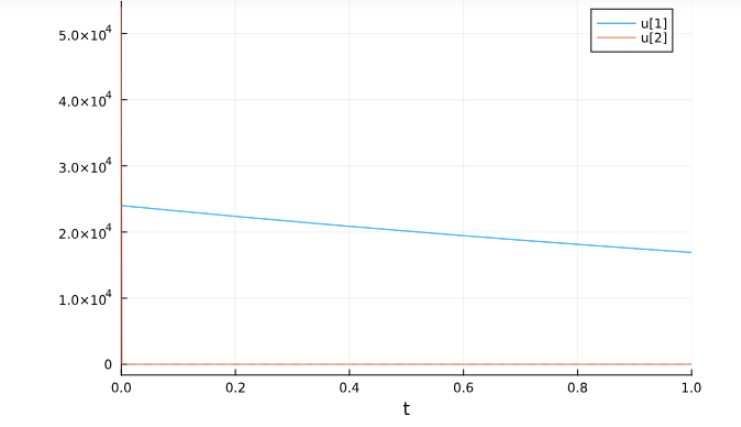
. 1:

- Model of combat operations with the participation of regular troops and partisan detachments

In [13]:
```
#Модель ведение боевых действий с участием регулярных войск и
#партизанских отрядов
function g!(du, u, p, t)
    du[1] = -a2*u[1]-b2*u[2]+P2(t)
    du[2] = (-c2*u[1]*u[2])-h2*u[2]+Q2(t)
end
```

Out[13]:
```
g! (generic function with 1 method)
```

Second graph



. 2:

Final

Final

- In the first model, it can be noted that Army Country Y won thanks to their numerical superiority, and in the second model, Country Y lost even with their numerical superiority due to the fact that the regular army did not fight. *Thanks for your attention*