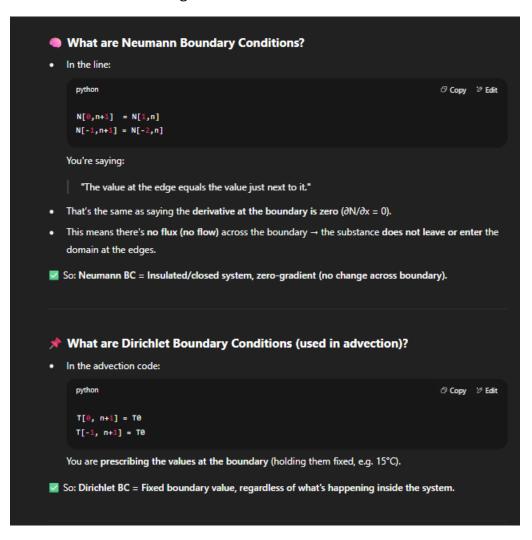
This is how chat helped me with question 2 for Exercise 12:

## This what I asked:

```
This is what I have for diffusion: # Question 2
  N[0,n+1] = N[1,n]
  N[-1,n+1] = N[-2,n]
  # discretization of the second derivative
  rhs = kappa*(N[:-2,n]-2*N[1:-1,n]+N[2:,n])/(dx**2)
  N[1:-1,n+1] = N[1:-1,n] + rhs*dt and this is what I had for
advection: # Question 2 and Question 3
  rhs = -c^*(T[2:,n]-T[:-2,n])/(2.*dx) # L1
  T[1:-1,n+1] = T[1:-1,n] + rhs*dt # L2 ... Now please help me on
this: Look for the comment #Question 2 in the code. This is a different
type of
boundary conditions called Neumann conditions (not to be mistaken
with von
Neumann). How would you describe them? Change the boundary
conditions to
the ones used in the advection equation (Dirichlet boundary
value at the boundary is prescribed). Run this code and compare it
original: why do you think the Neumann boundary conditions are
more realistic?
```

## This is the solution that I got:



```
How to Change Neumann → Dirichlet in Your Diffusion Code

Replace:

python

N[0,n+1] = N[1,n]

N[-1,n+1] = N[-2,n]

With:

python

Python

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N[0,n+1] = N0 # set a fixed value like N0 = 0 or 10 or whatever makes sense

N[-1,n+1] = N0

You'll need to define N0 above your loop:

python

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N0 = 0.0 # or any fixed boundary value you want
```