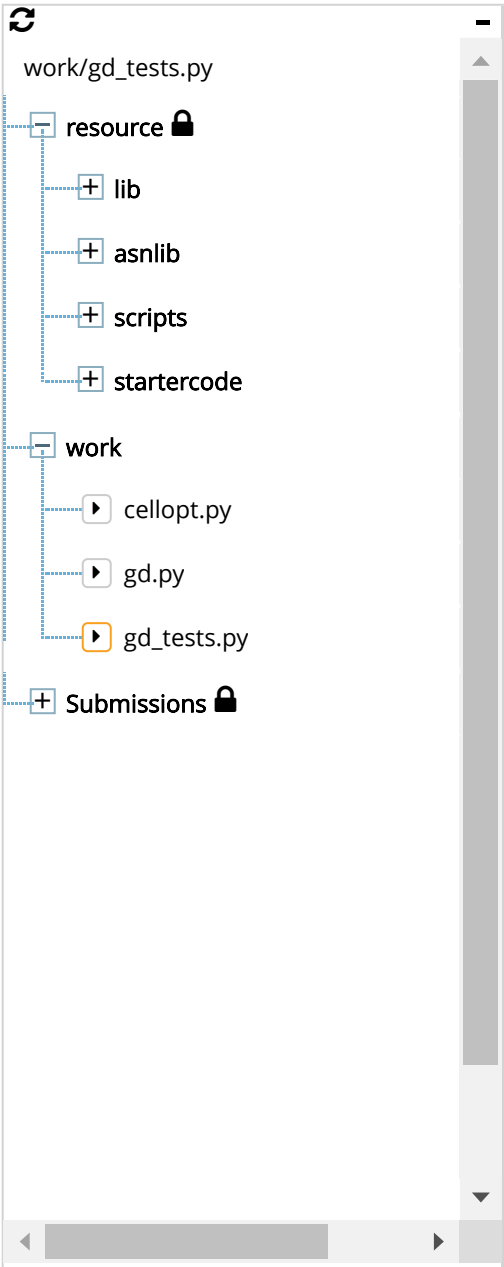


```
    alpha = 0.1
    nStop = 40
    xhist, Jhist = gd.gradient_descent(J1, xstart, alpha, nStop, verbose=True, pdict=pdict)
    print(f"In run_test1: (xopt, yopt) = ({xhist[-1,0]:.2e}, {xhist[-1,1]:.2e}), Jmin = {Jhist[-1

    # Set up linearly spaced points in x and y for evaluating objective function
    Nx = 101
    Ny = 101
    bx = np.linspace(-1., 1., Nx)
    by = np.linspace(-1., 1., Ny)
    f = np.zeros((Nx, Ny))

    #### BEGIN SOLUTION ####
    xy = np.zeros(2)
    for j in range(len(bx)):
        for i in range(len(by)):
            xy[0], xy[1] = bx[j], by[i]
            f[i,j] = J1(xy, pdict)[0]
    fig, axs = plt.subplots()
    cs = axs.contour(bx, by, f) #, cmap='RdGy')
    axs.clabel(cs)
    axs.set_xlabel('x')
    axs.set_ylabel('y')
    for x, y in xhist:
        axs.plot(x, y, marker='o', color='green')
    axs.plot(x, y, marker='o', color='magenta')
    #### END SOLUTION ####
    return axs, cs

```