Homework Assignment 2

MATH 588 - Introduction to FEM

Student: Lazizbek Sadullaev
ID: 011808389

March 4, 2025

Page for FreeFem++ Code

FreeFem++ Code

```
// Define mesh boundary
//border C(t=0, 2*pi){x=cos(t); y=sin(t);}

//mesh Th = square(100,010);
border B(t=0,1) { x=t; y=0; }
border R(t=0,1) { x=1; y=t; }
border T(t=0,1) { x=1-t; y=1; }
border L(t=0,1) { x=0; y=1-t; }
int n = 100;// n =100;

// Building mesh
mesh Th = buildmesh (B(n)+R(n)+T(n)+L(n));

// The finite element space defined over Th is called here Vh
fespace Vh(Th,P1);
Vh u,v;// Define u and v as piecewise-P1 continuous functions

// Define a function f
func f = -sin(pi*x)*sin(2*pi*y);

// Get the clock in second
real cpu=clock();

// Define the PDE
solve Poisson(u,v) =
int2d(Th)( // The bilinear part
        dx(u)*dx(v)
  + dy(u)*dy(v))

- int2d(Th) // The right hand side
        (f*v)
+ on(B, R, T, L,u=0) ; // The Whatever the boundary condition u=g is;

// Plot the result
plot(u);

// Display the total computational time
cout << "CPU time = " << (clock()-cpu) << endl;
```