Department of Computer Engineering
Batch (2020 - 2021)

PLUGIN BASED SYSTEM FRAMEWORK FOR IMAGE PROCESSING

Project ID : TN03-CS-A6, PHI-CS-05

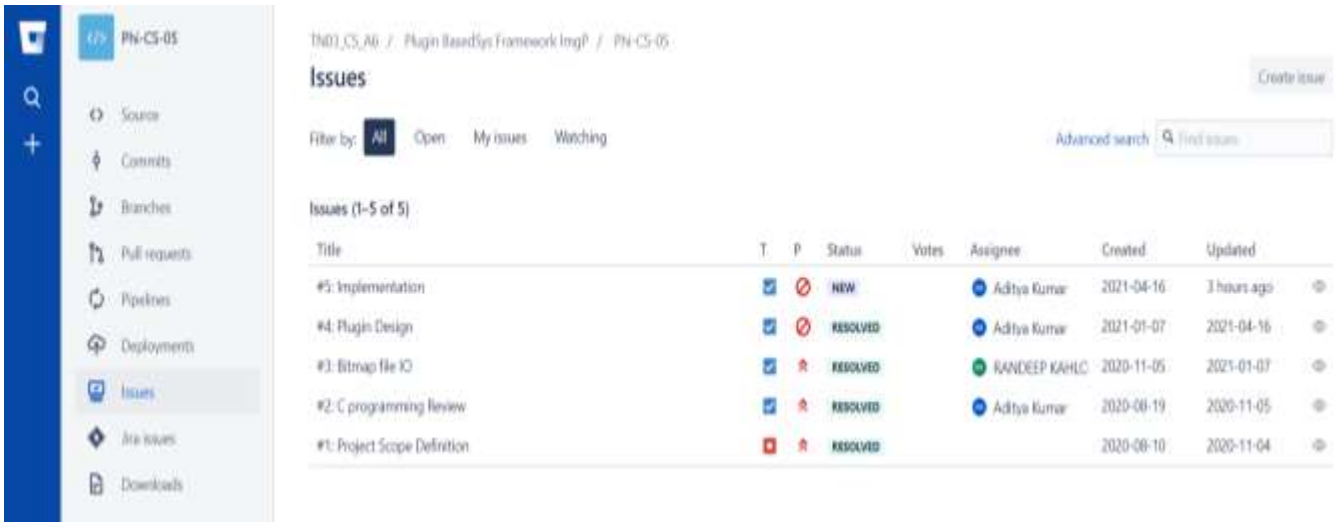
Project Guide : Prof. Vishwajit Gaikwad

Group Leader : Aditya Kumar

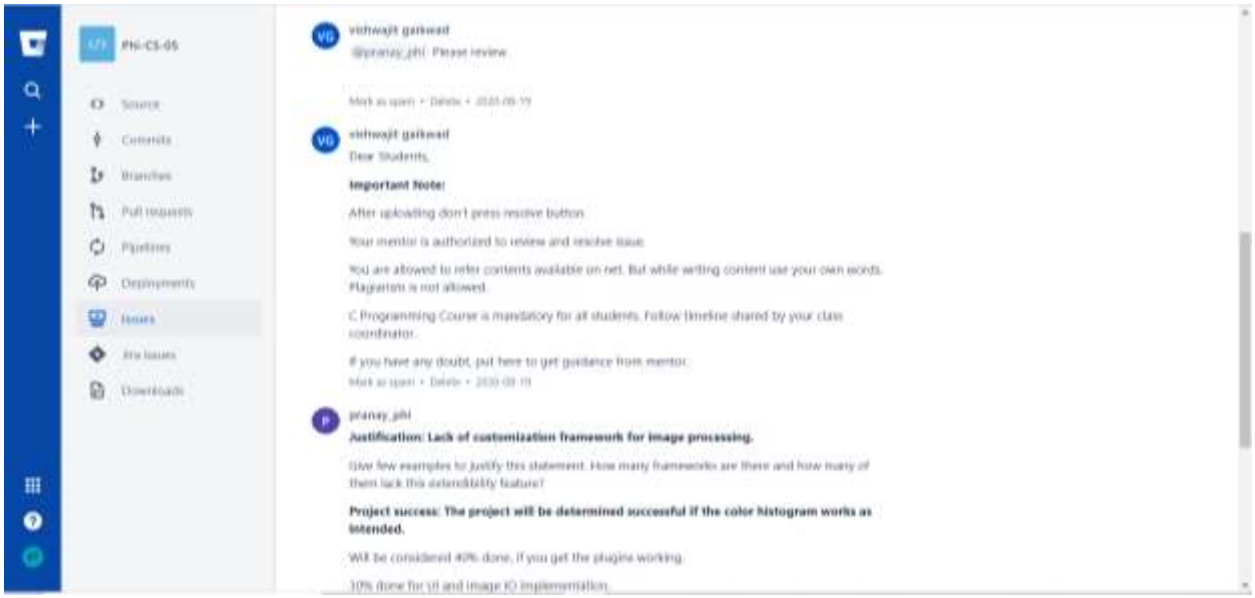
Group Members : Ankit Gore, Krupali Tayade, Priyanka Chikane

BIT BUCKET TASK STATUS

- **Issues List :**



1) **Issue 01 : Project Scope Definition**


PN-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
vishwajit gaikwad
@pranay_phi Please review
Mark as open • Delete • 2020-09-19
vishwajit gaikwad
Dear Students,
Important Note:
After uploading don't press resolve button
Your mentor is authorized to review and resolve issue.
You are allowed to refer contents available on net. But while writing content use your own words. Plagiarism is not allowed.
C Programming Course is mandatory for all students. Follow timeline shared by your class coordinator.
If you have any doubt, put here to get guidance from mentor.
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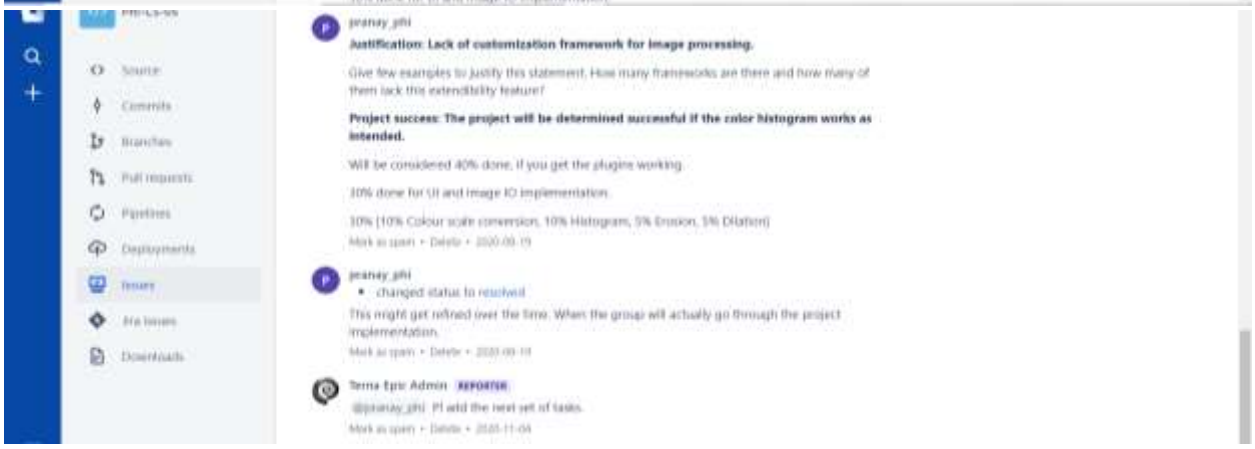
pranay_phi
Justification: Lack of customization framework for image processing.
Give few examples to justify this statement. How many frameworks are there and how many of them lack this extendibility feature?
Project success: The project will be determined successful if the color histogram works as intended.
Will be considered 40% done, if you get the plugins working.
10% done for UI and image IO implementation.


Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
pranay_phi
Justification: Lack of customization framework for image processing.
Give few examples to justify this statement. How many frameworks are there and how many of them lack this extendibility feature?
Project success: The project will be determined successful if the color histogram works as intended.
Will be considered 40% done, if you get the plugins working.
10% done for UI and image IO implementation.
10% (10% Colour scale conversion, 10% Histogram, 5% Erosion, 5% Dilation)
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pranay_phi
changed status to resolved
This might get refined over the time. When the group will actually go through the project implementation.
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Terra Epic Admin REPORTER
@pranay_phi Pl add the next set of tasks.
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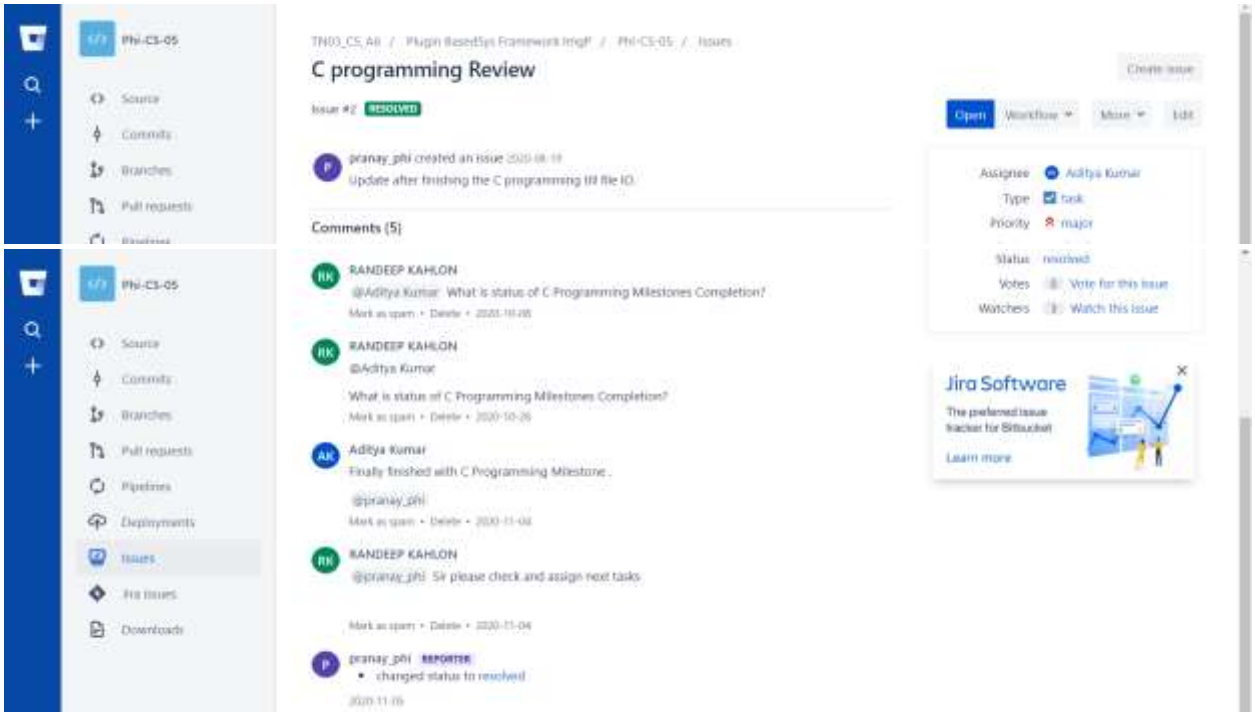
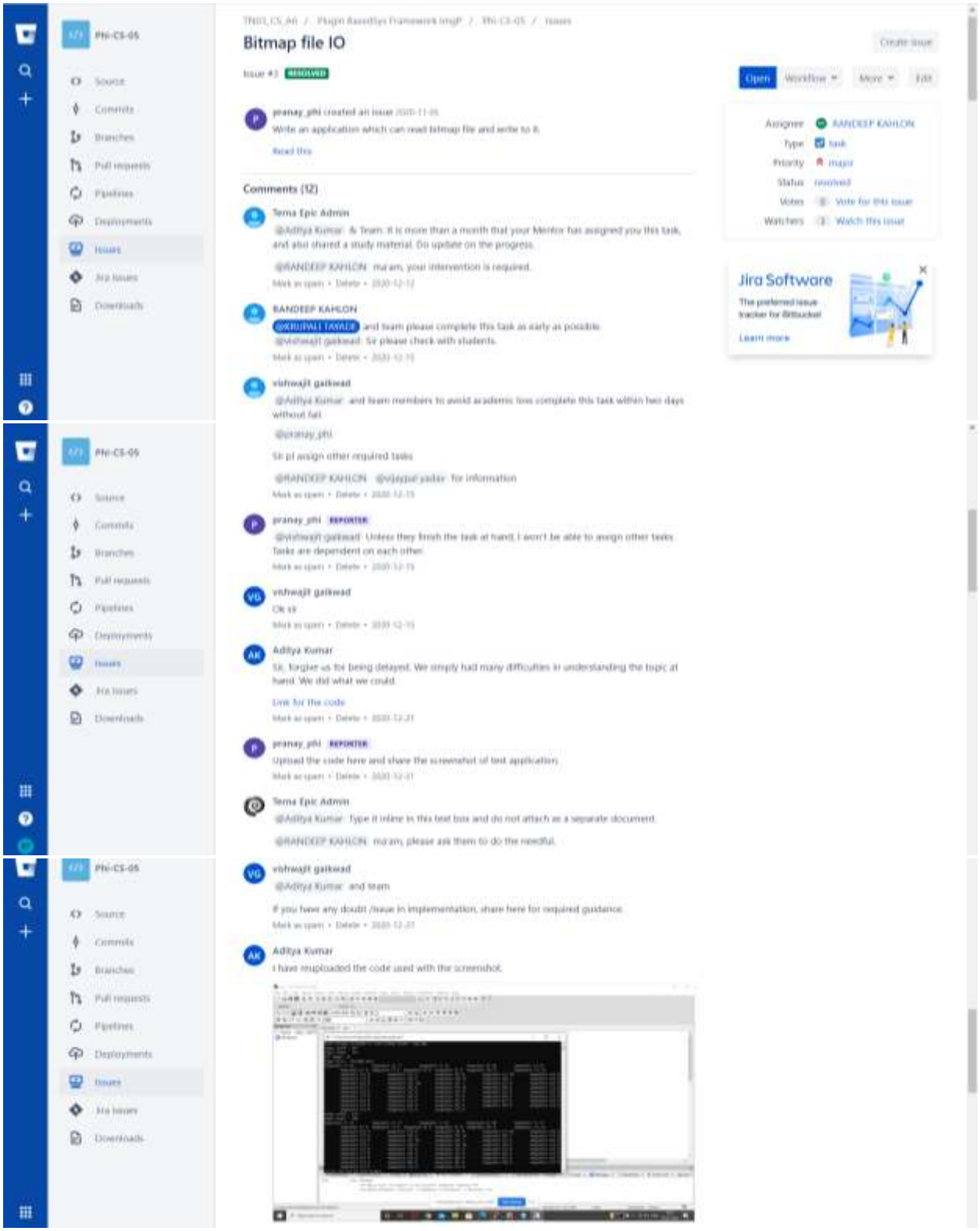
2) Issue 02 : C Programming Review



3) Issue 03 : Bitmap File IO



pinging @pranay_phi sir for review.

Mark as open • Delete • 2020-12-28

RK RANDEEP KAHLON

@pranay_phi Sir please review task.

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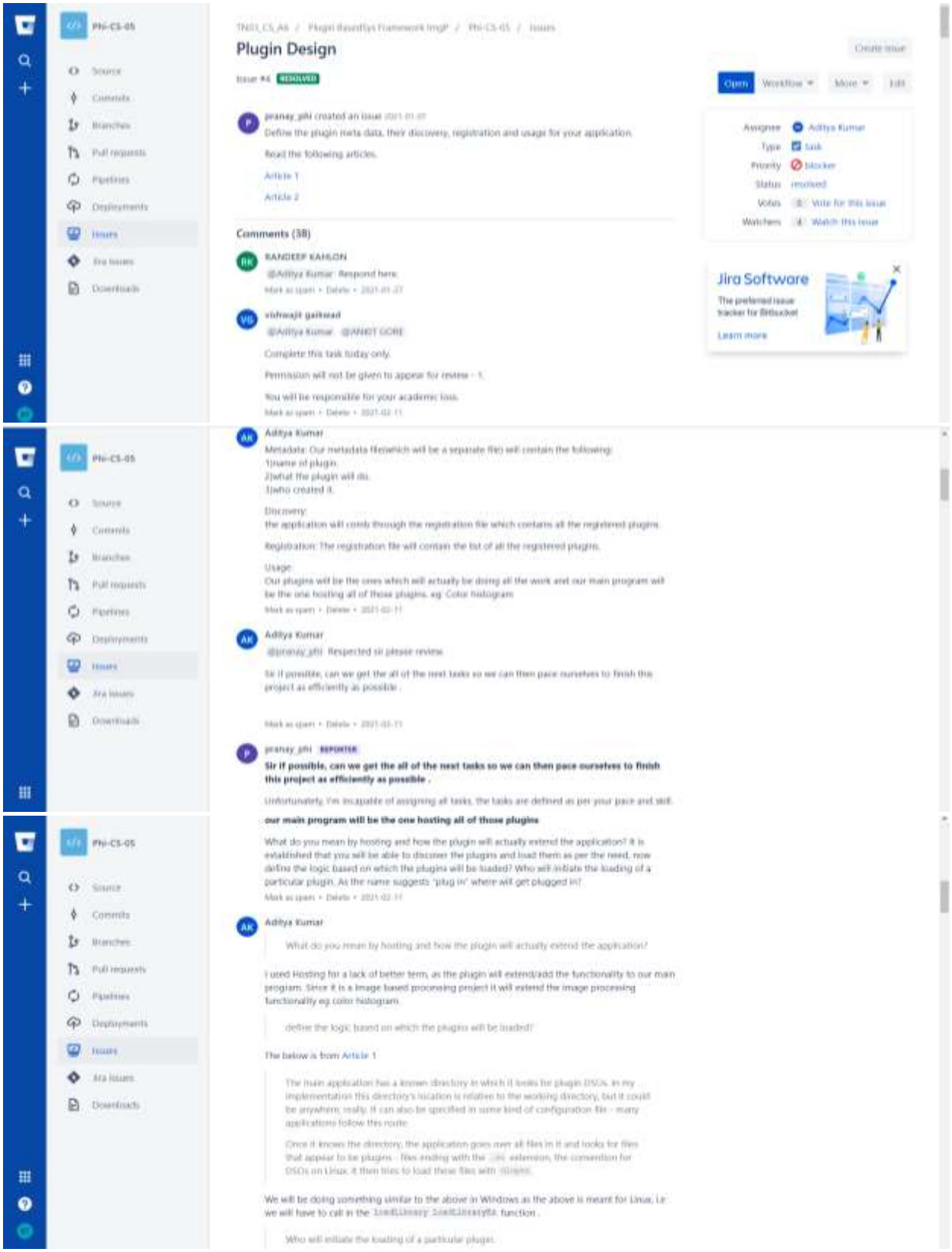
P pranay_phi REPORTER

- changed status to resolved

2021-01-07

4) Issue 04 : Plugin Design



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Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads

The user will be the one to initiate loading which will then have the main program load the plugin. We may try to build a plugin manager to ease further use.

> As the name suggests "plug in" where will get plugged in?

The application hook, which is goin to be present on the main programs.

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Aditya Kumar
@pranay_phi review if possible.
Mark as open • Delete • 2021-02-17

Aditya Kumar

> Who will initiate the loading of a particular plugin

As discussed today, Plugin manager along side the application is responsible for the loading of the plugins.

Pls review @pranay_phi as soon as possible.

Mark as open • Delete • 2021-02-19

pranay_phi REPORTER
as soon as possible ... Command or Request? With this behaviour, when you will get into a job environment, you might get fired.

I think this was discussed during the doubt session.

Mark as open • Delete • 2021-02-20

Aditya Kumar
Forgive me for my rudeness. It was not intentional and thank you for pointing that out.

Mark as open • Delete • 2021-02-23

Aditya Kumar
@pranay_phi sir have we met the goals or resolved this issu properly?

Mark as open • Delete • 2021-02-28

pranay_phi REPORTER
Yes, but you need to create a block diagram depicting the design of plugins and the role of plugin manager.

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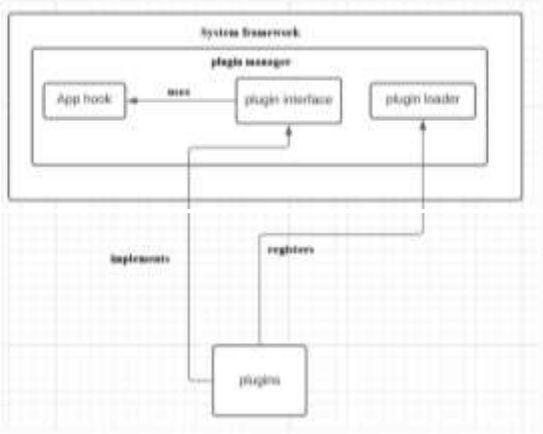
Aditya Kumar
@pranay_phi pls review.



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Aditya Kumar
The above image is for the role of plugin manager. We had issues with the actual design of the plugin, which will be discussed in the upcoming interaction.

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pranay_phi REPORTER
What is the block AppHook? How could pluing interface is directly used by AppHook (whatever it is)? Plugin loader has no relation with plugin interface?

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vishwajit gaikwad
Dear Team Member,

You are required to complete 100% implementation of project before March end.

Use Bitbucket and doubt solving sessions for required guidance. Plagiarism in code / documents will not be tolerated.

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Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira Issues
Downloads

After EPIC mentors approval, termwork will be accepted and you are allowed to appear for viva exam.

You are required to prepare project report in consultation with your internal guide.

For any issue contact your guide and class project coordinator.

Mr. V. B. Gaikwad

Project Coordinator

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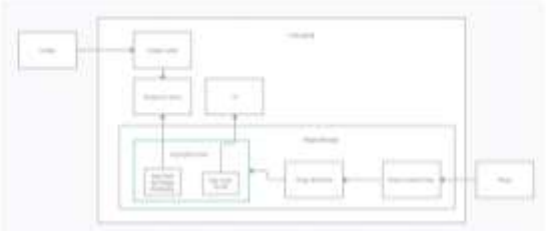
AK **Aditya Kumar**

Pls check



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Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira Issues
Downloads

P **pranay_phi** REPORTER

What is App Hook, during chat this term makes sense but when you are defining it as a block it can't be a notion that there is something which does something, you need to be explicit about it.

What is the relevance of arrow from plugin interface to Application hook block?

You need to have some common interface which the plugins will implement to get consumed by Image Processor, Image Loader and UI.

For example, image load.

```
typedef struct _myproject_ImageFileLoader_t
{
   const char* ImageMatchAlias;
   Image_t*(*LoadImage_fp)(const char* filename);
   int(*FreeImage_fp)(Image_t*);
}ImageFileLoader_t;

//Corresponding Plugin

typedef struct _myproject_ImageFileLoader_plugin_t
{
   ImageFileLoader_t* (*CreateLoader_fp)();
   int(*DestroyLoader_fp)(ImageFileLoader_t*);
}IPluginImageFileLoader_t;

//Above is the glue between plugin and the loader ...
//Image loader within your framework will need to work
//with the plugin manager to discover all plugins which
//are implementing IPluginImageFileLoader_t and it will
//choose the right plugin for loading the image, based on
//the user's input.
```

What I have explained here shall be visible from the block diagram, the same goes for Image processor and UI items if supported.

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Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira Issues
Downloads

VG **vishwajit gaikwad**

@Aditya Kumar and Team

Follow instructions given by Pranay sir.

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RK **RANDEEP KAHLON**

@Aditya Kumar and team Understand and complete task soon.

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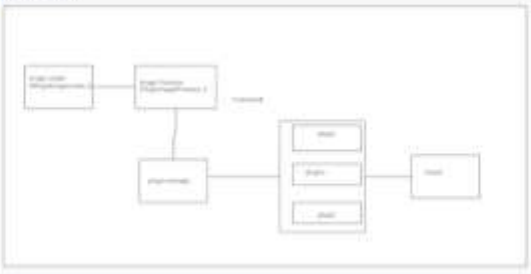
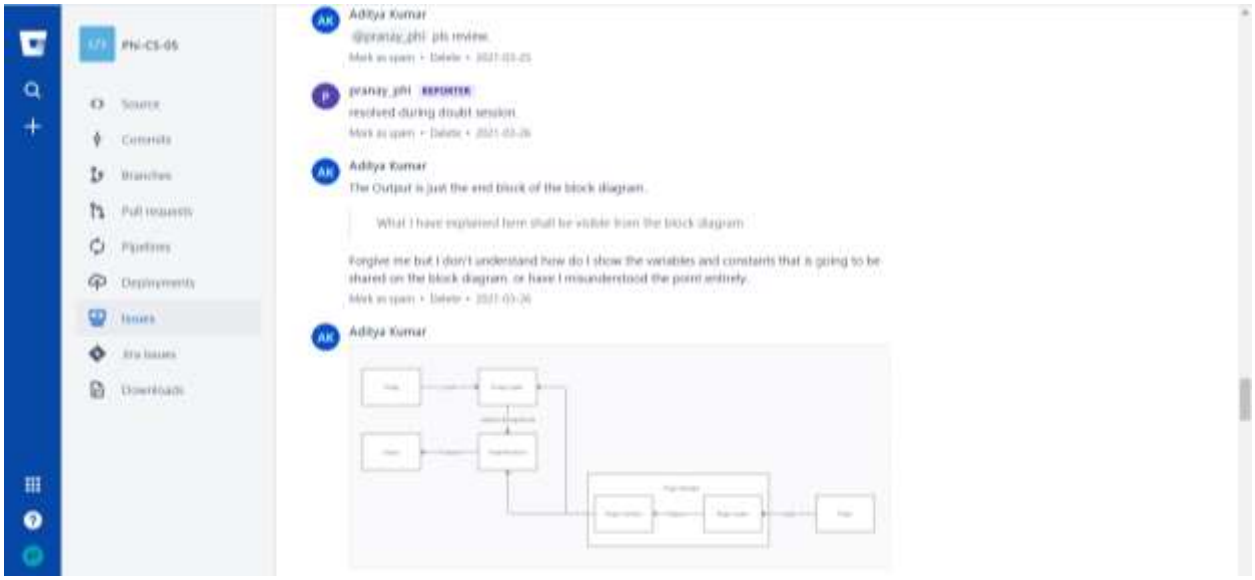
AK **Aditya Kumar**




Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
Aditya Kumar
@pranay_phi pls review
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pranay_phi REPORTER
resolved during doubt session.
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Aditya Kumar
The Output is just the end block of the block diagram.
What I have explained here shall be visible from the block diagram
Forgive me but I don't understand how do I show the variables and constants that is going to be shared on the block diagram, or have I misunderstood the point entirely.
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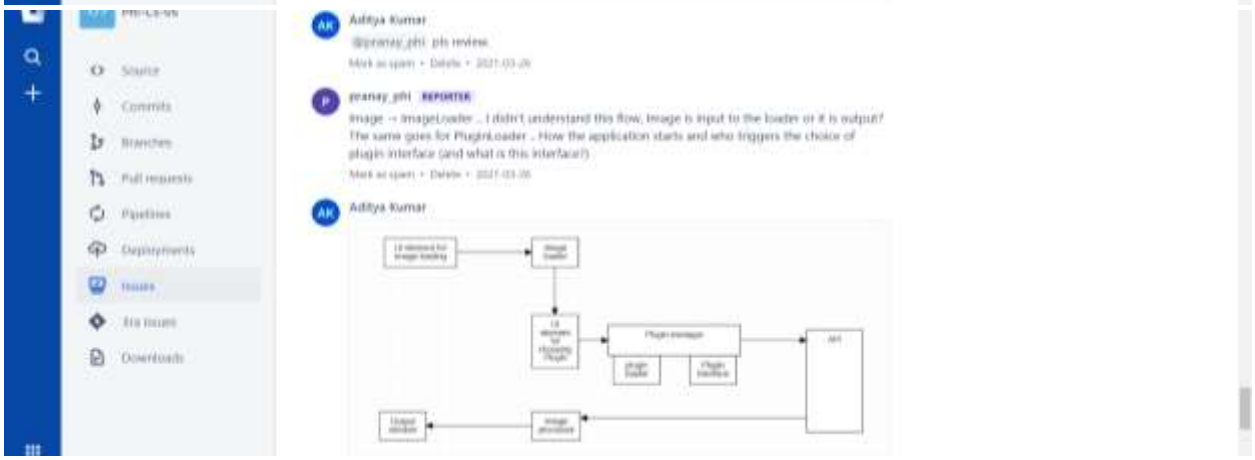
Aditya Kumar


Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
Aditya Kumar
@pranay_phi pls review
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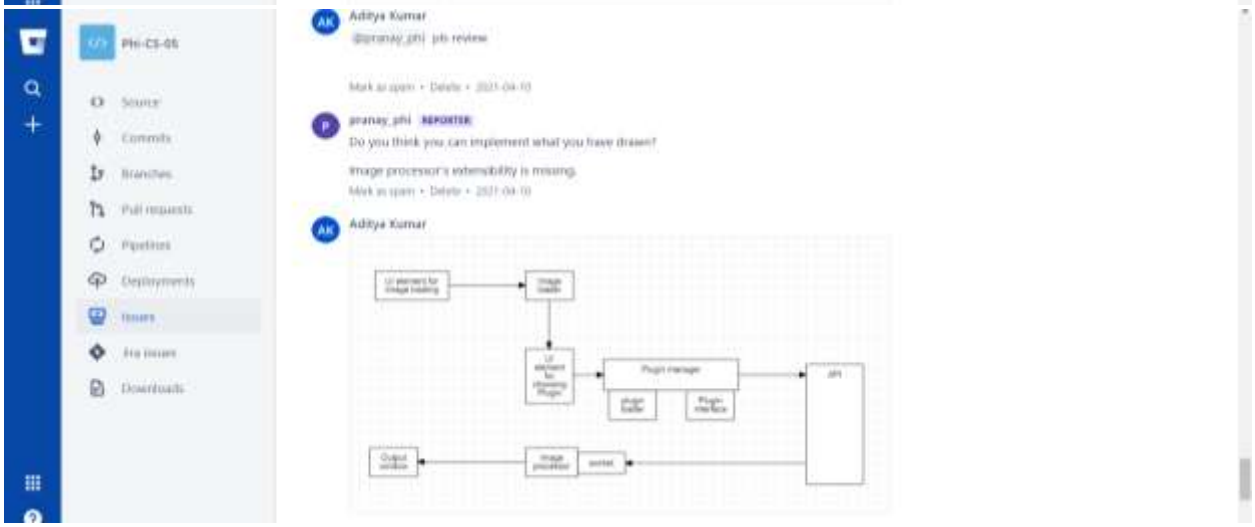
pranay_phi REPORTER
Image → ImageLoader .. I didn't understand this flow, Image is input to the loader or it is output? The same goes for PluginLoader .. How the application starts and who triggers the choice of plugin interface (and what is this interface?)
Mark as spam • Delete • 2021-03-26
Aditya Kumar


Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
Aditya Kumar
@pranay_phi pls review
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pranay_phi REPORTER
Do you think you can implement what you have drawn?
Image processor's extensibility is missing.
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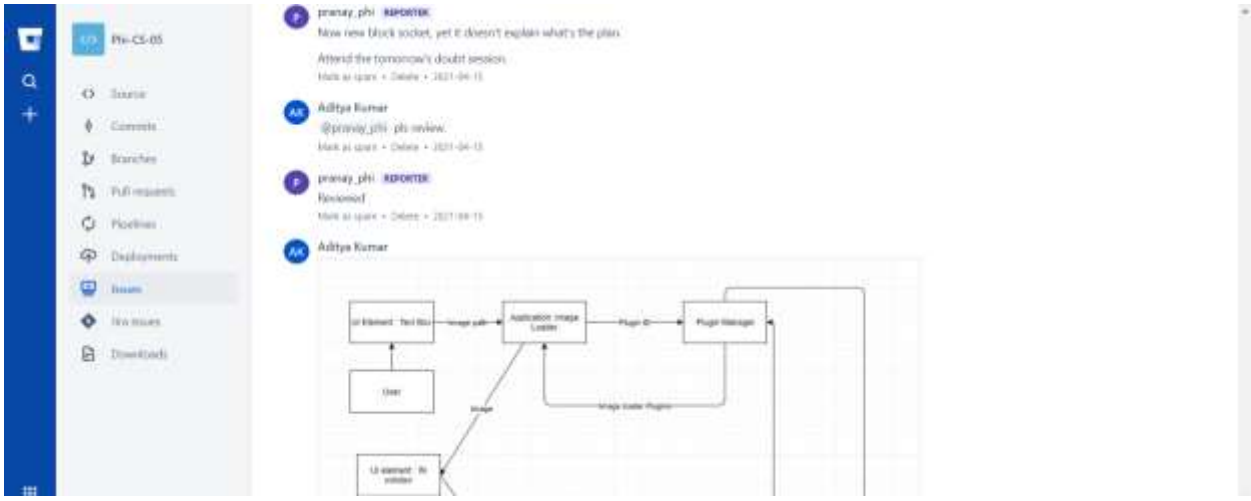
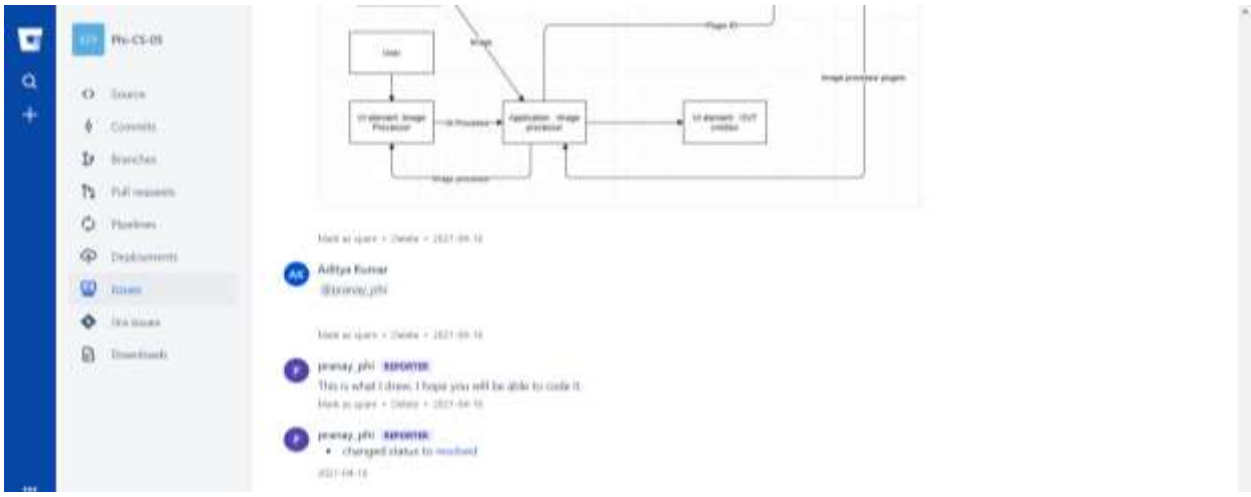
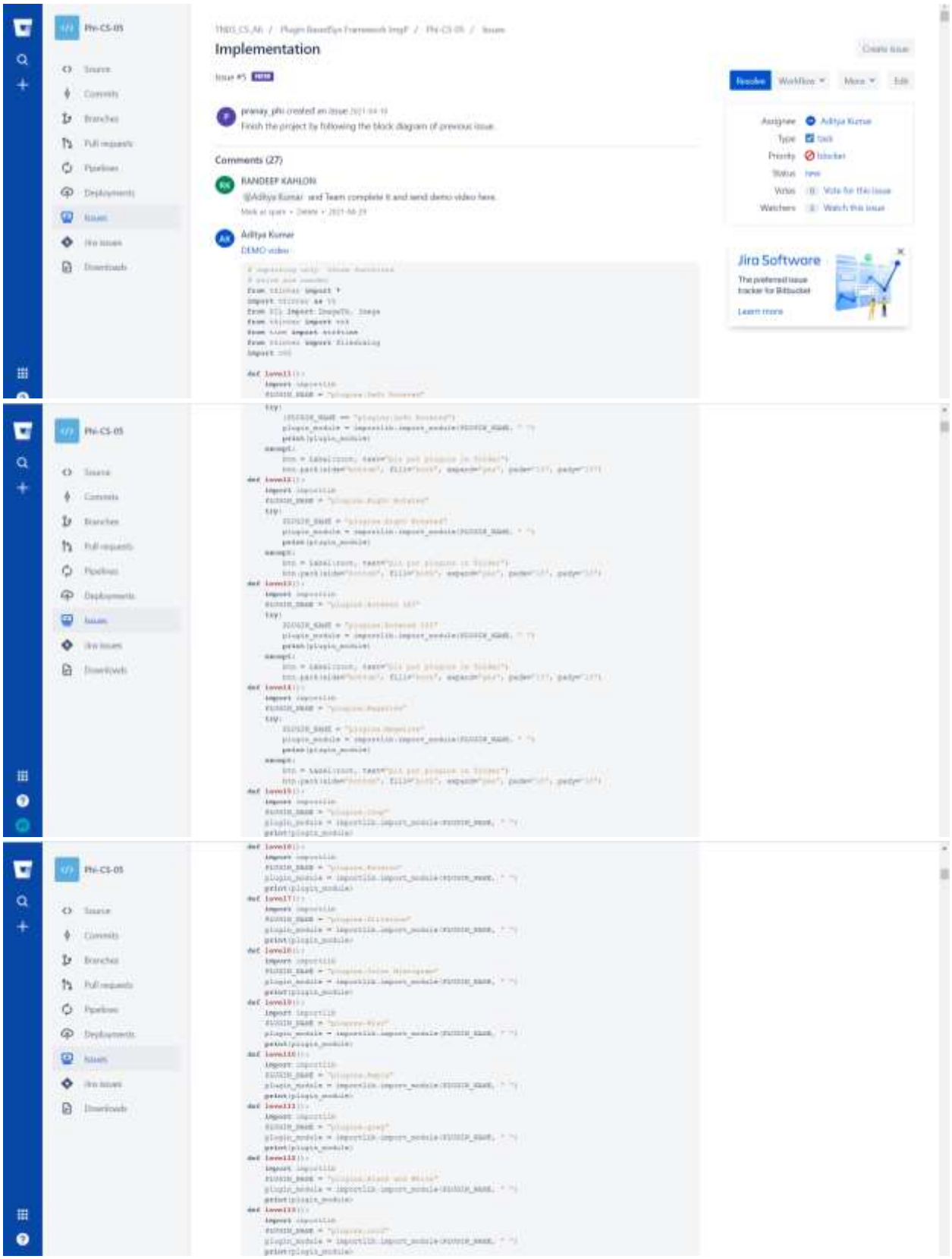
Aditya Kumar


Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
pranay_phi REPORTER
Now new block socket, yet it doesn't explain what's the plan.
Attend the tomorrow's doubt session.
Aditya Kumar
@pranay_phi pls review.
pranay_phi REPORTER
Reviewed
Aditya Kumar


Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
Aditya Kumar
@pranay_phi
pranay_phi REPORTER
This is what I drew. I hope you will be able to code it.
pranay_phi REPORTER
changed status to resolved

5) Issue 05 : Implementation



Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads

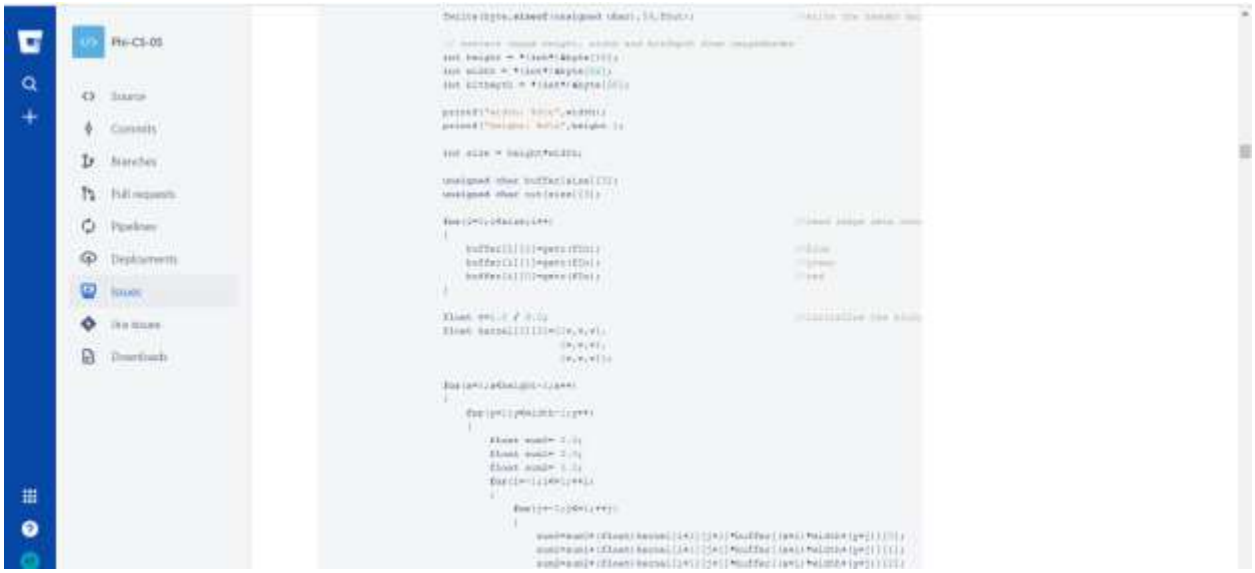
Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines

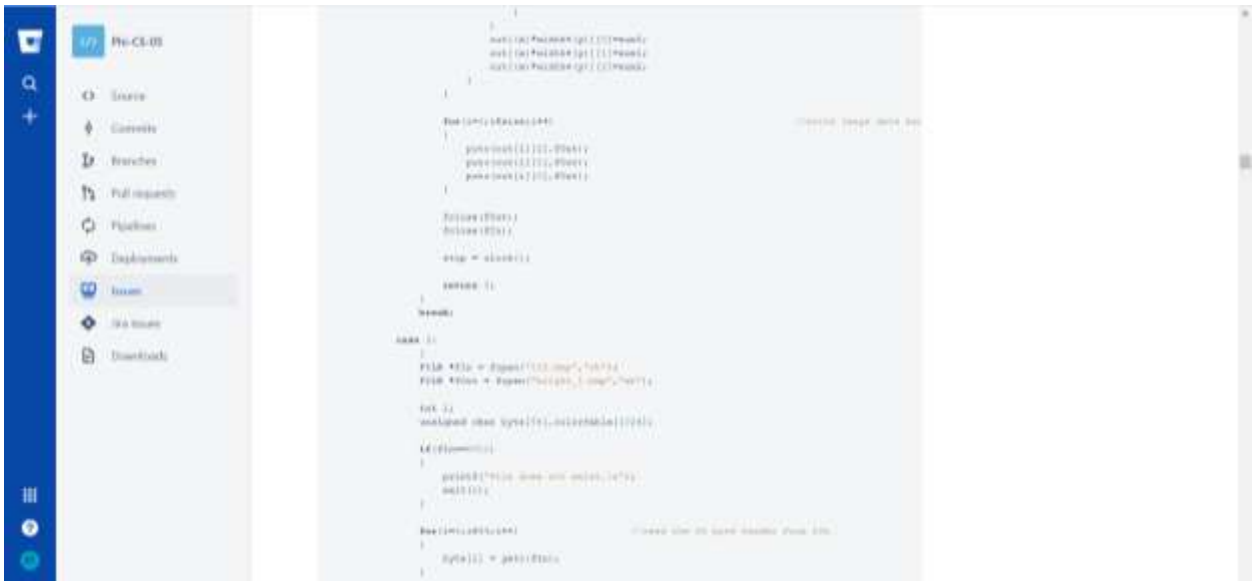
Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
pranay_phi REPORTER
In Python there was hardly anything to be done in the project. I wonder when the language got changed.
@Sierra Epic Admin Remove this project from my list. The group is in autonomous mode.
Mark as open • Delete • 2021-04-26
Aditya Kumar
Sir,
Please forgive us. We had a couple of issues at hand before the demo/industrial review.
1)Demo : we also had an industrial demo to show, which was not visible with the c program. As such we built the python code as a backup incase we couldn't implement the gui in the program.
2)The GUI : we were not able to implement the gui at all in C.

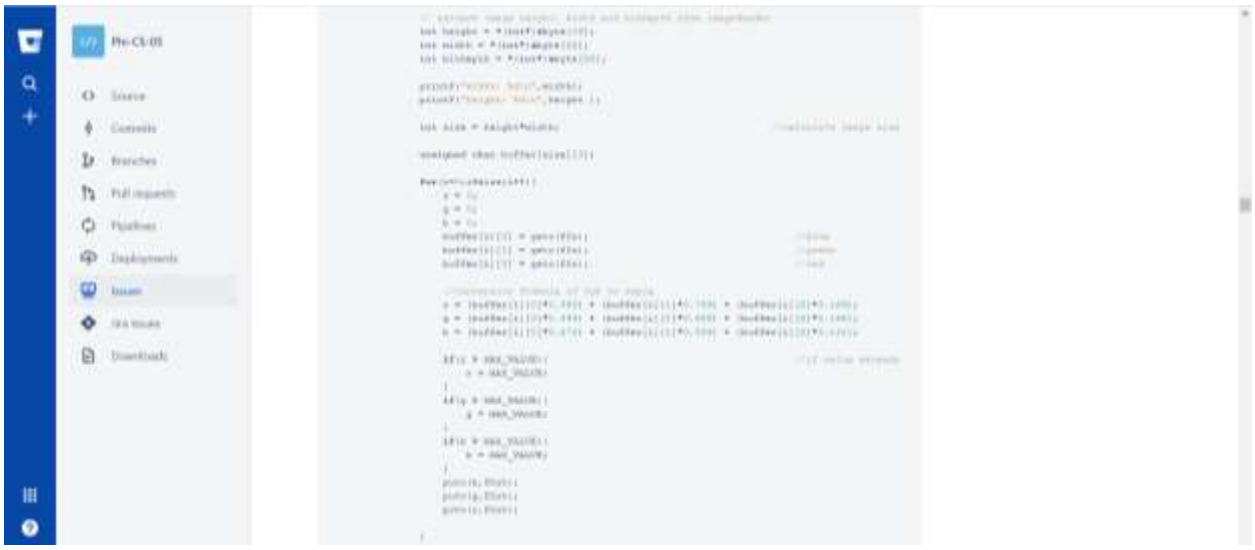
Pin-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads

Pin-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads

Pin-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads

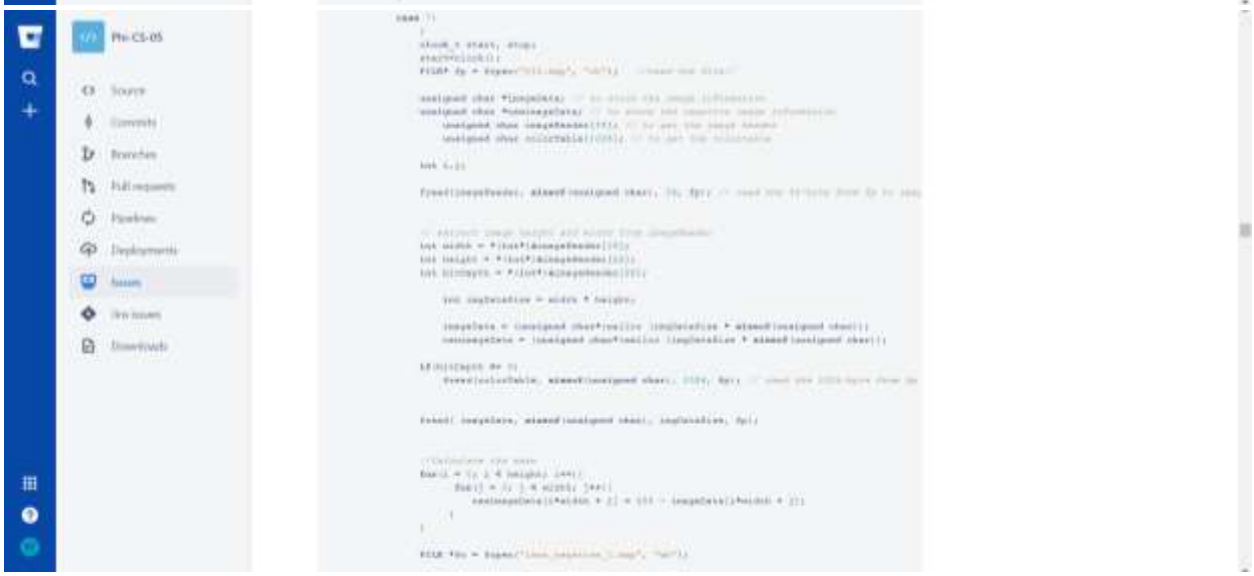


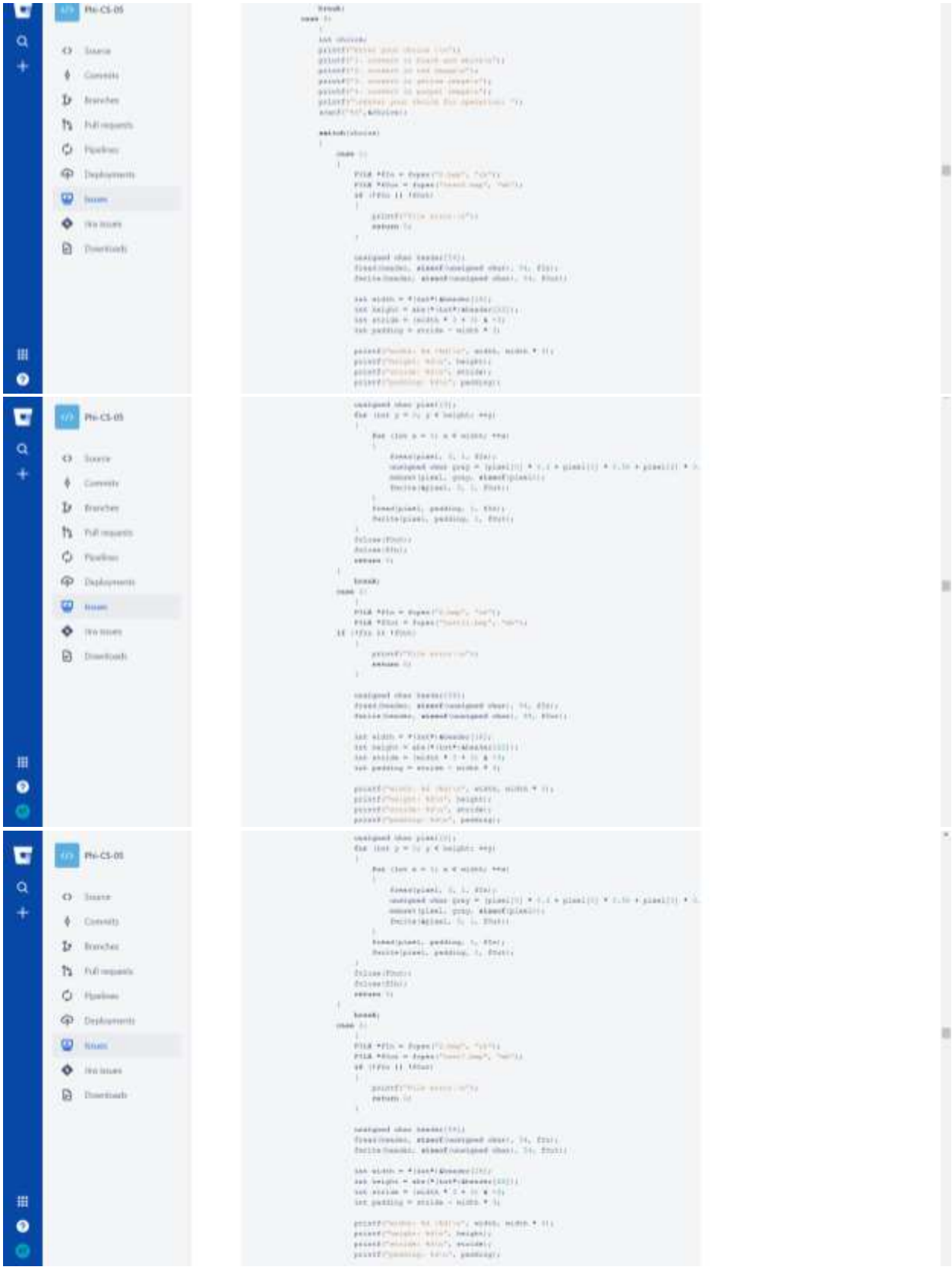


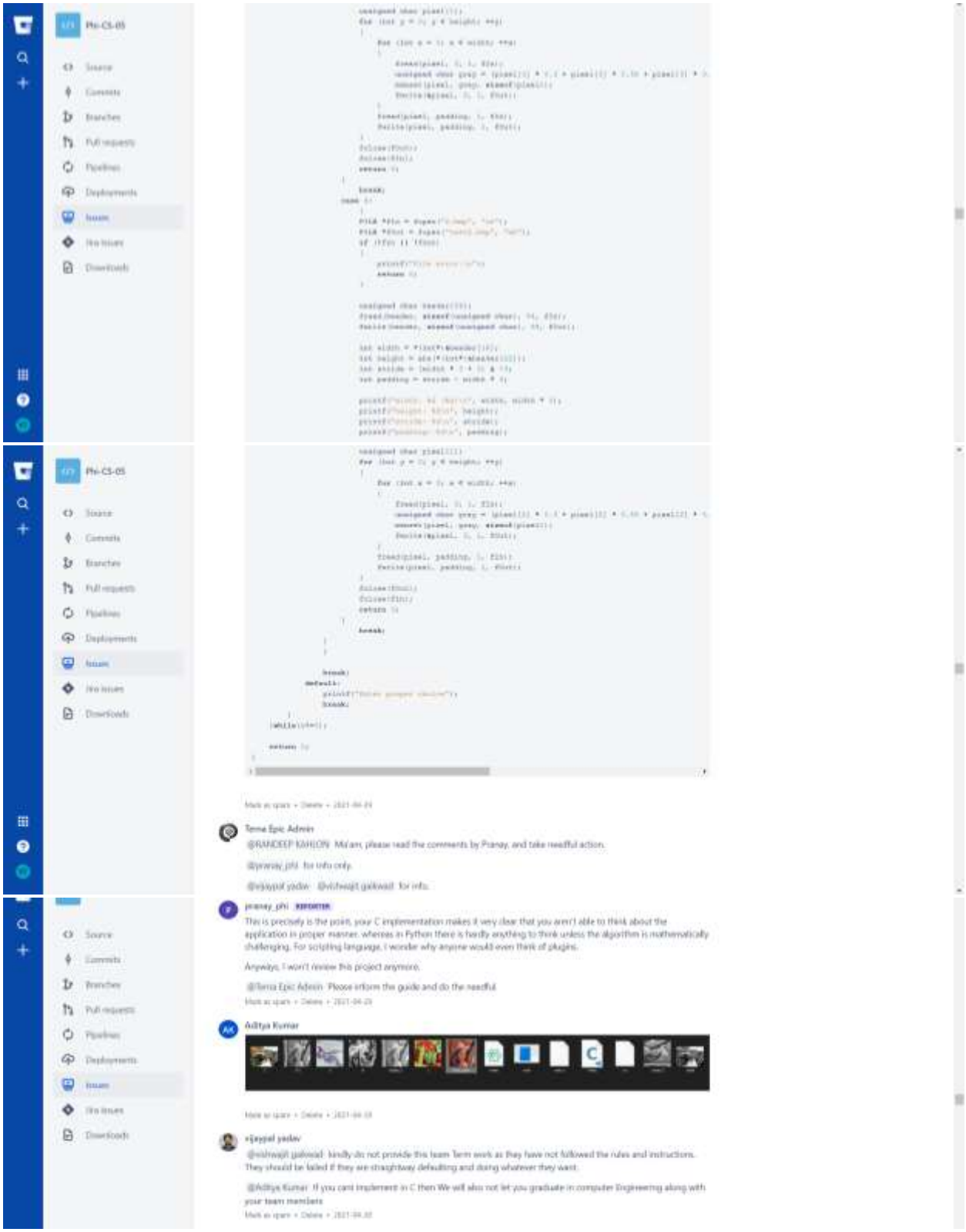


Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads

Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads


Phi-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads





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Terra Epic Admin

@RANDEEP KAHLON Ma'am, please read the comments by Pranay, and take needful action.

@pranay_phl for info only.

@vijaypal yadav @vishwajit gaikwad for info.

pranay_phl REPORTER

This is precisely is the point, your C implementation makes it very clear that you aren't able to think about the application in proper manner, whereas in Python there is hardly anything to think unless the algorithm is mathematically challenging. For scripting language, I wonder why anyone would even think of plugins.

Anyways, I won't review this project anymore.

@Terra Epic Admin Please inform the guide and do the needful.

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Aditya Kumar

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vijaypal yadav

@vishwajit gaikwad kindly do not provide this team Term work as they have not followed the rules and instructions. They should be failed if they are straightway defaulting and doing whatever they want.

@Aditya Kumar If you cant implement in C then We will also not let you graduate in computer Engineering along with your team members

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```
#include <stdio.h>
#include <windows.h>
#include <conio.h>
#include <time.h>
#include <dos.h>
#include "graphicsmenu.h"
#define MAX_MENUS 20
#define MAX_SUBS 100
#define MAXMENUNAME_LENGTH 40
#define MAXSUBNAME 50
int main()
{
    char ch,ch1[10] = "";
    gotoxy(5,5);printf("\nEnter Your Full Path to open image : \n");
    scanf("%s", &ch1);
    FILE *file = fopen(ch, "r");
    char ch2[100] = "";
    gotoxy(5,5);printf("\nEnter Your Full Path to open image : \n");
    scanf("%s", &ch2);
    FILE *file = fopen(ch, "r");
    displaybitfile( &ch2); //call to graphicsmenu
}
```

Pin-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads
pluginmanager

Pin-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads

Pin-CS-05
Source
Commits
Branches
Pull requests
Pipelines
Deployments
Issues
Jira issues
Downloads

Branches
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Deployments
Issues
Jira issues
Downloads
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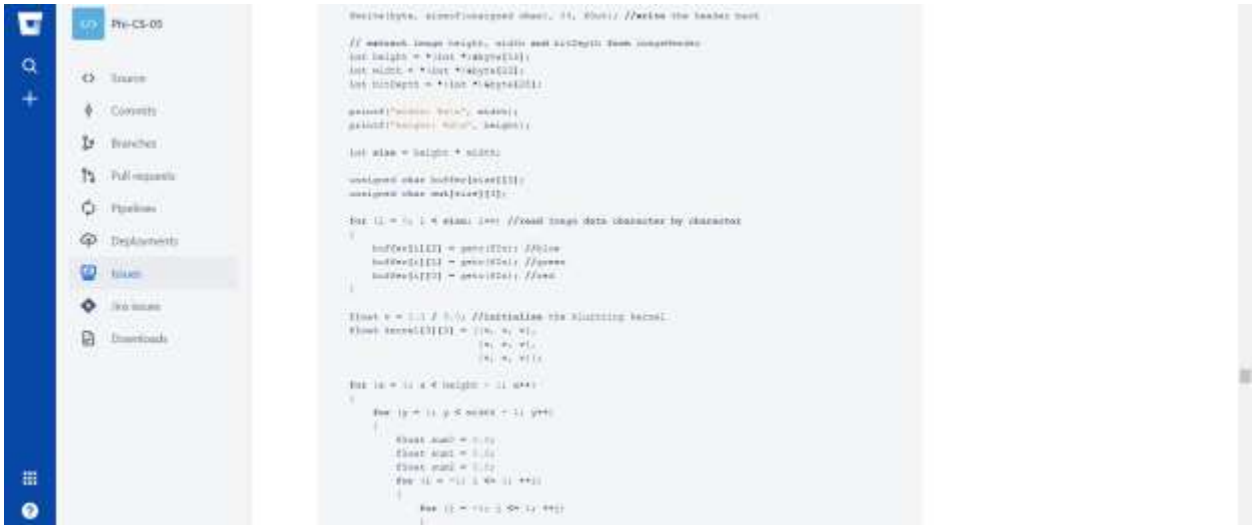
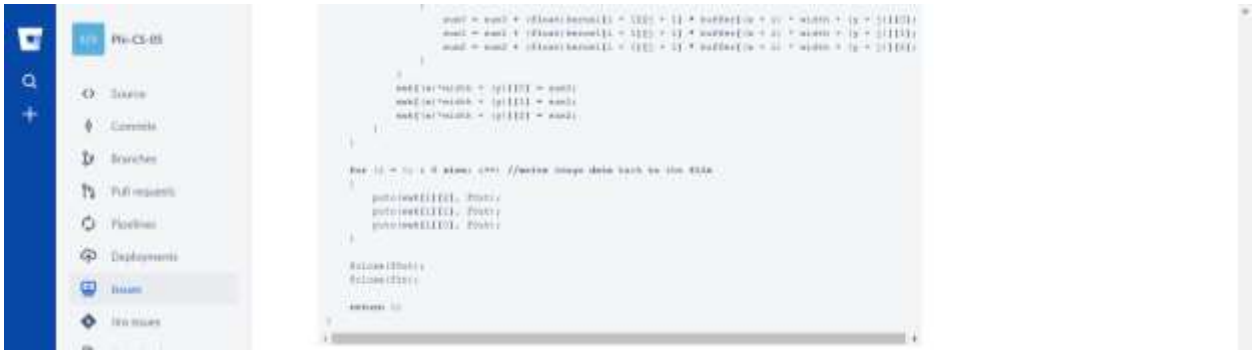
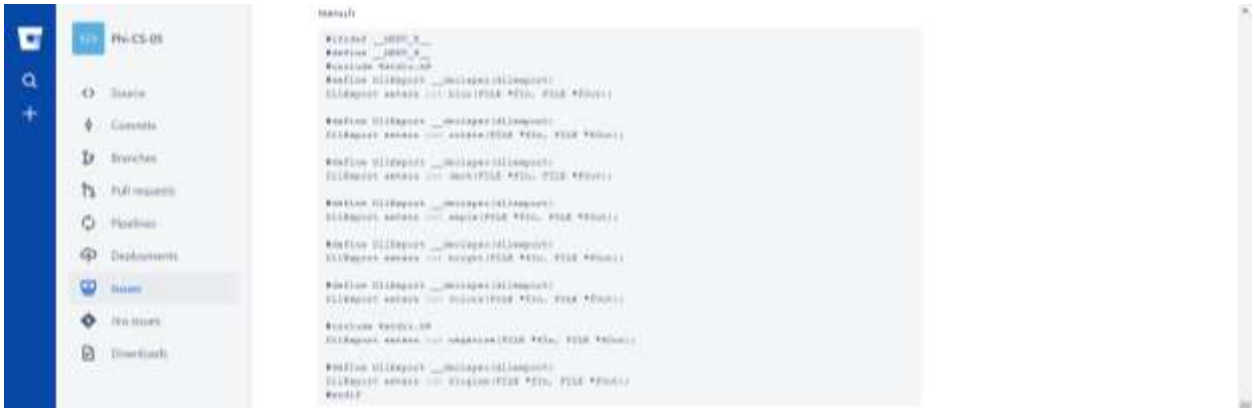
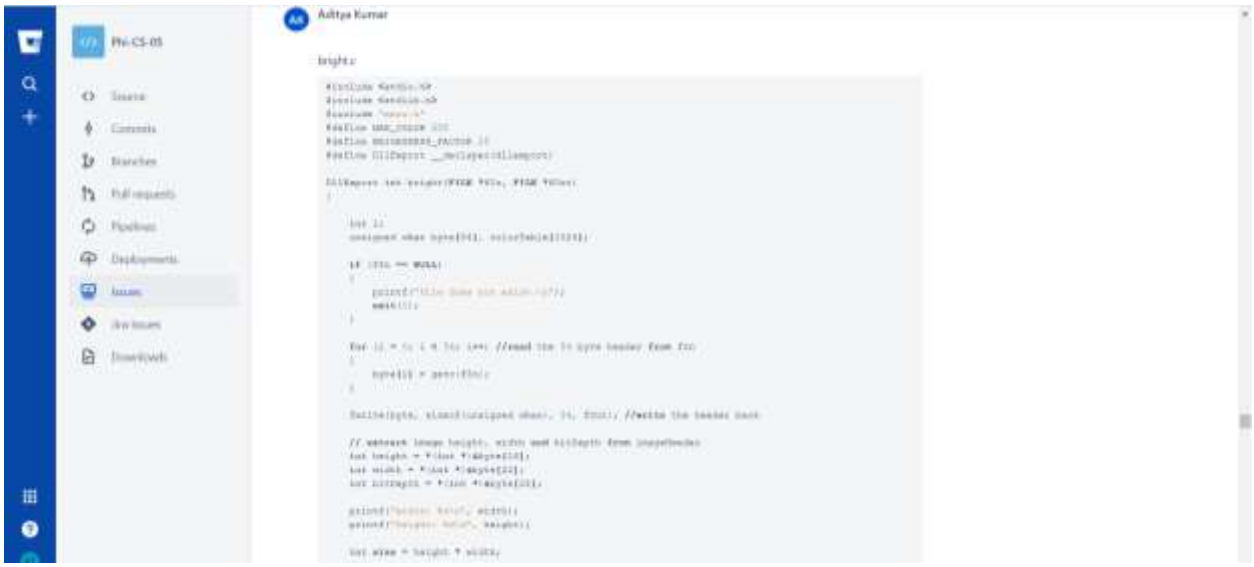


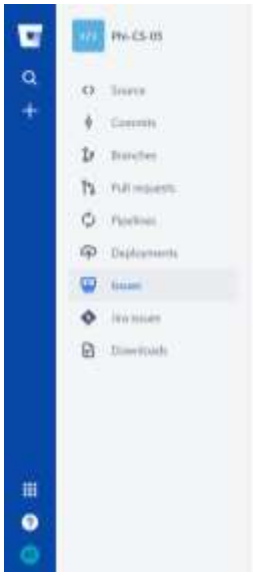






Aditya Kumar

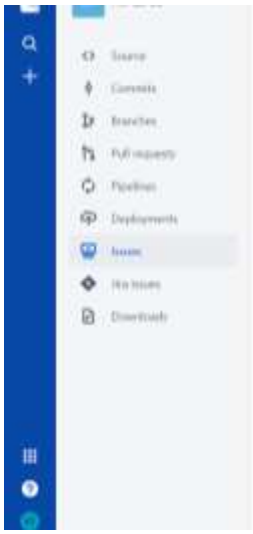
bright.c



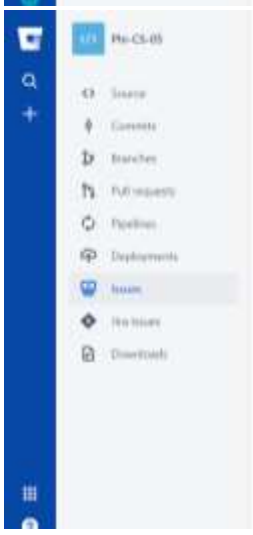

```
    if (bmiSegm == 1)
    {
        fread(colorTable, sizeof(unsigned char), 1024, fin);
        fwrite(colorTable, sizeof(unsigned char), 1024, fout);
    }

    unsigned char buffer[size]; //to store the image data
    int temp;

    fread(buffer, sizeof(unsigned char), size, fin); //read image data

    for (i = 0; i < size; i++) //increasing pixel values to get image bright
    {
        temp = buffer[i] + BRIGHTNESS_FACTOR;
        buffer[i] = (temp > MAX_COLOR) ? MAX_COLOR : temp;
    }

    fwrite(buffer, sizeof(unsigned char), size, fout);

    fclose(fin);
    fclose(fout);

    return 0;
}
```

```
color:
```

```
#include Metals.h
#include Gasoline.h
#include Gasoline.h
#include Milne.h
#include "main.h"
#define MAX_VALUE 255
#define MAX_COLOR 255
#define BRIGHTNESS_FACTOR 25
#define THRESHOLD 40
#define UllExport __declspec(dllexport)
```




```
UllExport int fclose(FILE *fin, FILE *fout)
{
    int choice;
    int m, y;
    printf("Enter your choice (%d");
    printf("1. convert in black and white\n");
    printf("2. convert in red image\n");
    printf("3. convert in yellow image\n");
    printf("4. convert in purple image\n");
    printf("Enter your choice for operation: ");
    printf("%d", choice);

    switch (choice)
    {
    case 1:
    {

        if (!fin || !fout)
        {
            printf("File error.\n");
            return 0;
        }

        unsigned char header[54];
        fread(header, sizeof(unsigned char), 54, fin);
        fwrite(header, sizeof(unsigned char), 54, fout);

        int width = *(int *)(header[18]);
        int height = sizeof(int *)(header[22]);
        int stride = (width * 3 + 3) & (4);
        int padding = stride - width * 3;

        printf("width: %d (%d\n", width, width * 3);
        printf("height: %d\n", height);
        printf("stride: %d\n", stride);
        printf("padding: %d\n", padding);

        unsigned char pixel[3];
```




```
        for (m = 0; m < width; ++m)
        {
            fread(pixel, 3, 1, fin);
            unsigned char gray = (pixel[0] * 0.3 + pixel[1] * 0.59 + pixel[2] * 0.11);
            memset(pixel, gray, sizeof(pixel));
            fwrite(pixel, 3, 1, fout);
        }
        fread(pixel, padding, 1, fin);
        fwrite(pixel, padding, 1, fout);
    }
    fclose(fin);
    fclose(fout);
    return 0;
}
fread;
case 2:
{

        if (!fin || !fout)
        {
            printf("File error.\n");
            return 0;
        }

        unsigned char header[54];
        fread(header, sizeof(unsigned char), 54, fin);
        fwrite(header, sizeof(unsigned char), 54, fout);

        int width = *(int *)(header[18]);
        int height = sizeof(int *)(header[22]);
        int stride = (width * 3 + 3) & (4);
        int padding = stride - width * 3;

        printf("width: %d (%d\n", width, width * 3);
        printf("height: %d\n", height);
        printf("stride: %d\n", stride);
        printf("padding: %d\n", padding);
```

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Branches
Pull requests
Pipelines
Deployments
Issues
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Branches
Pull requests
Pipelines
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Source
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Pull requests
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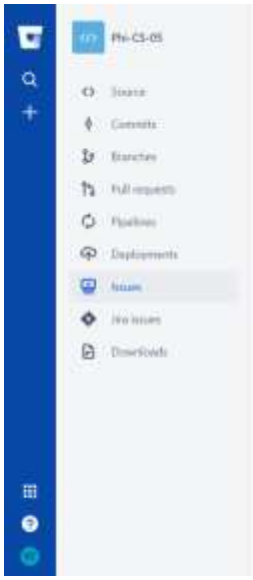
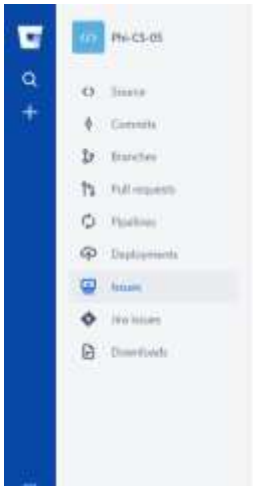


dark.c

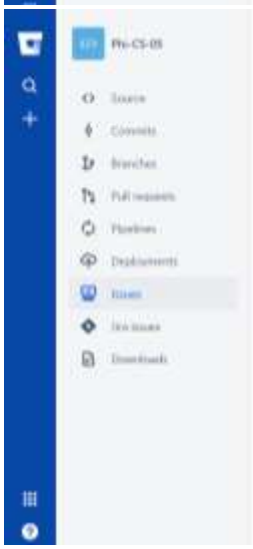
```
#include <stdio.h>
#include "menu.h"
#define THRESHOLD 60
#define DllExport __declspec(dllexport)

DllExport int dark(FILE *fin, FILE *fout)
{
    int i;
    unsigned char byte[54], colorTable[1024];

    if (fin == NULL) // check if the input file has not been opened successfully.
    {
        printf("File Open Not Exist.\n");
    }

    for (i = 0; i < 54; i++) //read the 54 byte header from fin
    {
        byte[i] = getc(fin);
    }

    fwrite(byte, sizeof(unsigned char), 54, fout); //write the header back

    // extract image height, width and bitDepth from imageHeader
    int height = *(int *)&byte[18];
    int width = *(int *)&byte[22];
    int bitDepth = *(int *)&byte[28];

    printf("width: %d\n", width);
    printf("height: %d\n", height);

    int size = height * width;

    if (bitDepth <= 8)
    {
        fread(colorTable, sizeof(unsigned char), 1024, fin);
        fwrite(colorTable, sizeof(unsigned char), 1024, fout);
    }
```




```
    unsigned char buffer[size]; //to store the image data

    fread(buffer, sizeof(unsigned char), size, fin); //read image data

    for (i = 0; i < size; i++) //decreasing pixel values to get image dark
    {
        if (buffer[i] > THRESHOLD)
            buffer[i] = buffer[i] - THRESHOLD;
    }

    fwrite(buffer, sizeof(unsigned char), size, fout); //write back to the output image

    fclose(fin);
    fclose(fout);

    return 0;
}
```

negative.c

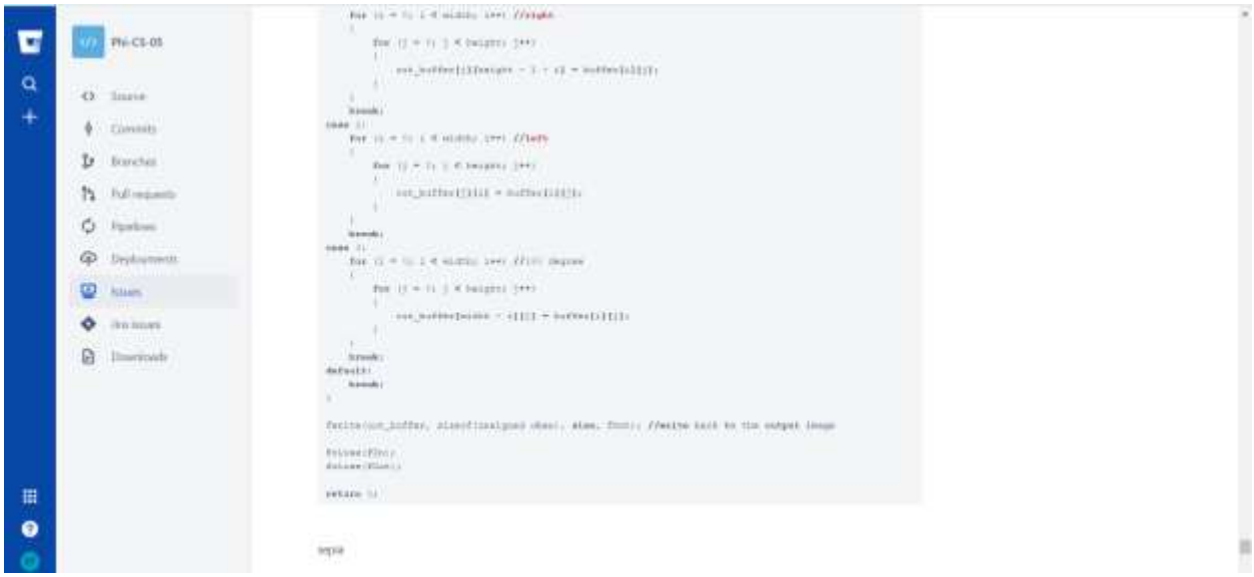
```
#include <stdio.h>
#include <stdlib.h>
#include "menu.h"
#define MAX_VALUE 255
#define MAX_COLOR 255
#define BRIGHTNESS_FACTOR 25
#define THRESHOLD 60
#define DllExport __declspec(dllexport)

DllExport int negative(FILE *fin, FILE *fout)
{
```



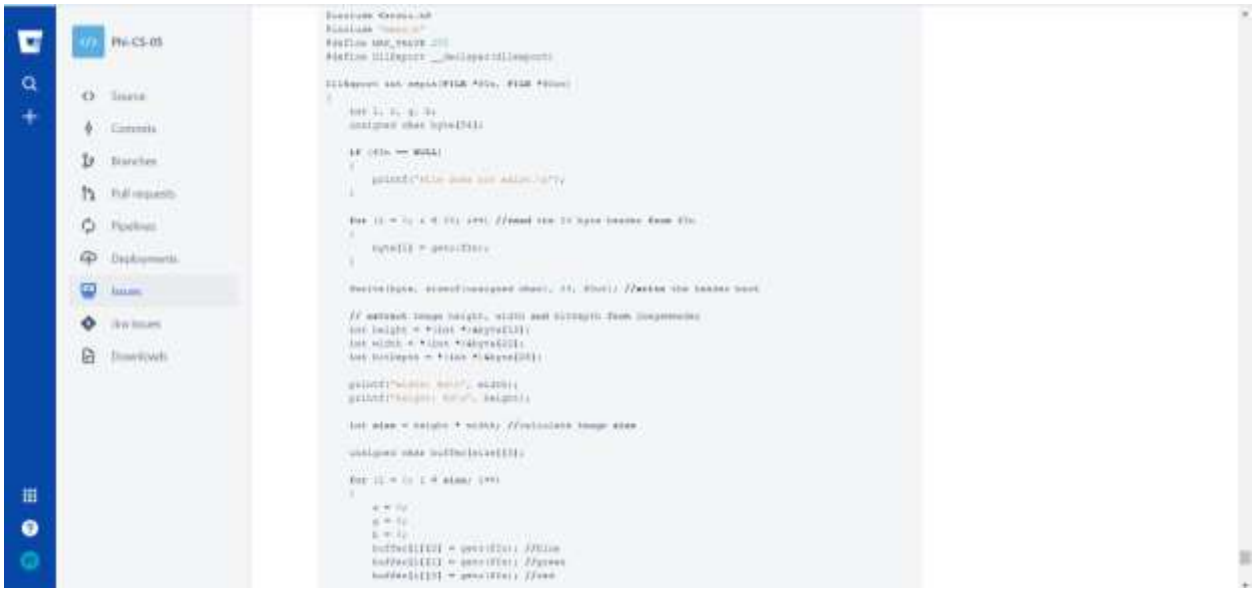

```
int i, j, g, b;
unsigned char byte[54];

if (fin == NULL)
{
    printf("File Open Not Exist.\n");
}

for (i = 0; i < 54; i++) //read the 54 byte header from fin
{
    byte[i] = getc(fin);
}

fwrite(byte, sizeof(unsigned char), 54, fout); //write the header back

// extract image height, width and bitDepth from imageHeader
int height = *(int *)&byte[18];
int width = *(int *)&byte[22];
int bitDepth = *(int *)&byte[28];

printf("width: %d\n", width);
printf("height: %d\n", height);

int size = height * width; //calculate image size

unsigned char buffer[size][3];

for (i = 0; i < size; i++)
{
    r = 0;
    g = 0;
    b = 0;
    buffer[i][2] = getc(fin); //blue
    buffer[i][1] = getc(fin); //green
    buffer[i][0] = getc(fin); //red
    r = 255 - buffer[i][2];
    g = 255 - buffer[i][1];
    b = 255 - buffer[i][0];
```

rotate.c

```
#include <stdbch>
#include "menu.h"
#define DllExport __declspec(dllexport)

DllExport int rotate(FILE *fin, FILE *fOut)
{
```



sepia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