

CS213: OOP

Assignment 1 – Task 2 & 3

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Introduction:

- We have used chat GPT and preplexity to generate the code for the polynomial header file.
- We tried to use gemini but its code contained error and was hard to fix
- We used chat gpt to generate the test cases and test code also.

Chat GPT implementation:

- We used Chat GPT-4o for generating the code for polynomial class.
- We just gave it the polynomial header file and asked it for an implementation, Successfully It generated working and correct code from the first time except for some bugs I will mention.

Chat GPT bugs:

- if you created a polynomial object using coefficients constructor with extra zeros in the right Chat GPT doesn't handle this and this causes logic errors in the code.

Example:

```
auto a = Polynomial({1, 0, 0});  
auto b = Polynomial({1});  
cout << a << endl;  
cout << b << endl;  
cout << (a == b) << endl;
```

Output:

```
+ 1 // Error: bad extra plus in the start  
1 // this has no problem  
0 // Error: they should be equal
```

Preplexity has automatically added an extra private Polynomial::trim method that trims the extra zeros from right.

Until now I have founded no errors in Chat GPT code except this edge case.

Preplexity Implementation:

- We worked with Preplexity for some time to generate the working and correct code.
- We gave it the same input as Chat GPT (the Polynomial header file) and asked it for an implementation.
- Preplexity redefined the class again which we have not wanted, so we mentioned that and it produced the definition only for methods and operators after that.
- Preplexity added an extra Polynomial::trim() method as we said earlier so we added it to the header file in the private section.
- Perplexity tried to use the minus operator (which has not been defined for polynomial class) so we mentioned that and it haven't used it again.

Preplexity Bugs:

- in the derivative method, when using it for an polynomial of degree zero it returns 1 instead of 0

Example:

```
auto a = Polynomial({5}); // function 5
cout << a.derivative() << endl;
```

Output:

1 // wrong it should be zero

The cause for this is that Preplexity used the default constructor which produces 1 not zero so we fixed this by using Polynomial({0}) instead.

Test Cases:

- Test cases are hard-coded at a .cpp file.
- We asked Chat GPT-4o mini to generate the test cases and the code that runs them which outputs all the details including time measurements.

Comparsion:

- Each of AIs contains some wrong points
- Preplexity failed at 27 test while Chat GPT failed at 32 test
- We can say that Preplexity code is a bit more efficient according to time measurements.
- We can say that Chat GPT is more responsive.
- It is hard to say that one AI is better than the other in everything
- The code they generated is similar to a certain point.

Chat GPT Code:

https://github.com/omar-azzam00/task-2/blob/master/code/polynomial_chat_gpt.cpp

Preplexity Code:

https://github.com/omar-azzam00/task-2/blob/master/code/polynomail_preplexity.cpp

Test Code:

<https://github.com/omar-azzam00/task-2/blob/master/test/test.cpp>

Chat GPT test resultes:

https://github.com/omar-azzam00/task-2/blob/master/test_resultes/chat_gpt_test_resultes.txt

Preplexity test resultes:

https://github.com/omar-azzam00/task-2/blob/master/test_resultes/preplexity_test_resultes.txt

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ID: **20230267**

Training Opportunity: **coursera.org**

1 . Who Offers It and Where It Is Located:

- * Coursera offers degrees, certificates and courses at various fields.

- * It is an online platform

3 . When It Opens and How Long It Is, and Online or Offline:

- * It is open always, long or short depends on what are you aiming to learn, it is fully online

4 . Conditions for Application, Acceptance, and Fees:

- * It is free to audit, but if you want a certificate you should pay fees, there is also financial aid

5 . The Different Learning Tracks:

- * Front end, back end, mobile development, data science and every other thing you can think at!

6 . Track Selection and Reason:

- * Selected Track: IBM Back end developer

- * Reason for Selection: It should help me learning python, django, git, linux bash and a lot of essential concepts to get an entry level job.

Name: **beshey beshay saeed**
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Training opportunity: **Information technology institute (ITI)**

Who offers it and where it is located:

*ITI is an institute that offers IT courses which is offered by universities, colleges and online websites.

*ITI is located in many areas all over Egypt like smart village and Cairo University and Alexandria and 6 October.

What it offers:

*It offers for all levels programs and scholarships to support Egyptians youth and improve their career opportunities by developing their skills and preparing them for highly in demand jobs, and related vast technologies to fulfill today's need and tomorrow's challenges like cybersecurity and AI development and embedded systems.

When it opens and how long it is and online or offline:

*It depends on the programs as its times varies from one program to another, And its periods varies as well like there is a program that last for 9 months and another for 4 months,

And it can be online by online websites like Mahara-Tech and it can be offline by universities and institutes like smart village.

The conditions for application and acceptance and the fees and conditions if any:

*It is a process to apply to ITI:

First: filling info (contact information and personal details and education and degrees)

Second: uploading documents

Third: selecting exam branch and preferred tracks

Fourth: the acceptance steps through exam and interview

And the fees in programs are full funded scholarship.

*The different learning tracks:

Embedded systems

E-learning

Cybersecurity

Graphical design

Web development

Application development by python

Internet of things

Front end and back end web development

AI development

What the track I liked: Cybersecurity

*Reason:

*it is a vital aspect in life as it protects data from piracy and loss, and in ITI it provides a well-designed courses for cybersecurity from low-level to advanced-level.

As it covers the basics and teaches ethical behavior to handle hacking ethically and the techniques to handle cyberattacks, to build a generation capable of handling challenges.

name : **bandar abdu lsalam mohammed yahya**
id: **20230774**

Training Opportunity: **FreeCodeCamp.com**

1 . Who Offers It and Where It Is Located:

* FreeCodeCamp is a nonprofit organization offering a platform for learning to code for free, accessible globally online.

2 . What It Offers:

* FreeCodeCamp provides a comprehensive, self-paced curriculum designed to teach programming skills. The platform includes various certifications and projects focusing on different aspects of software development, such as web design, JavaScript, data visualization, APIs, and microservices.

3 . When It Opens and How Long It Is, and Online or Offline:

* The platform is open year-round and entirely online, allowing learners to start any time and progress at their own pace. There is no fixed duration as learners can take as much time as needed to complete the courses and projects.

4 . Conditions for Application, Acceptance, and Fees:

* FreeCodeCamp is completely free and open to anyone with internet access. There are no formal applications, prerequisites, or fees involved in accessing the courses or obtaining certifications.

5 . The Different Learning Tracks:

* Some of the notable certifications include:

- Responsive Web Design
- JavaScript Algorithms and Data Structures
- Front End Development Libraries
- Data Visualization
- APIs and Microservices
- Information Security
- Machine Learning with Python

6 . Track Selection and Reason:

* Selected Track: JavaScript Algorithms and Data Structures

* Reason for Selection: This track is fundamental for any aspiring developer as it covers essential programming concepts and techniques needed to solve complex problems. Mastering JavaScript, a core language for web development, provides versatility and enhances employability across many technology sectors.