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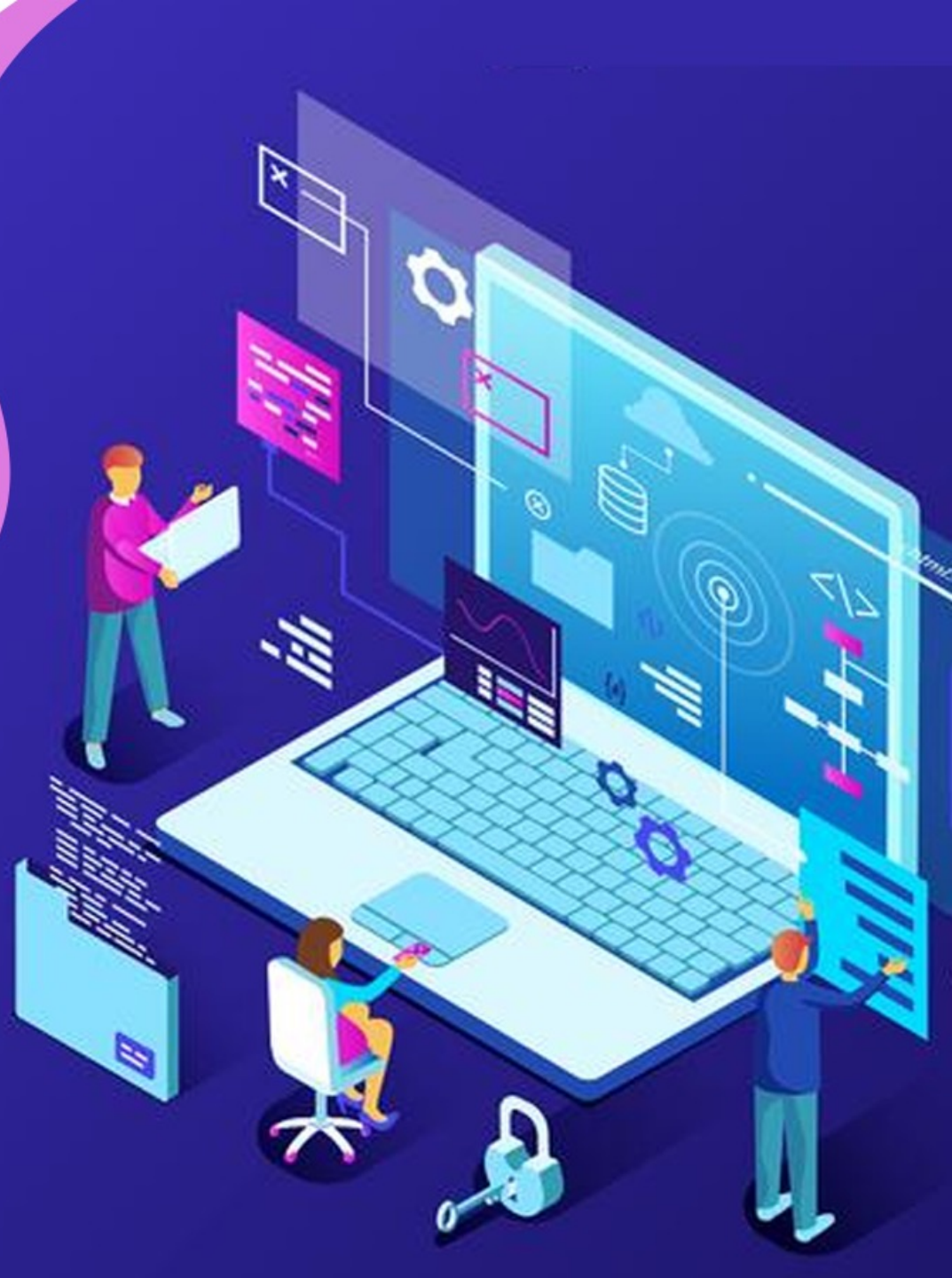
USTP CDO
DEPARTMENT OF COMPUTER SCIENCE

Computer Programming 2 (CS121)



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Lab Exercise 08

Design a UML and write a program that will output the sum of two quadratic polynomials. Your program must do the following:

- Define an abstract data type, **Poly** with three private data members **a, b** and **c** (type double) to represent the coefficients of a quadratic polynomial in the form: $\mathbf{ax^2 + bx + c}$
- Include a constructor in the **Poly** class to initialize all private data members with caller-supplied values (in addition to the default constructor!)
- Overload the **addition** operator to return the sum of two **Poly** objects.

Lab Exercise 08

- Overload the << (output) operator to output Poly objects in the following format, e.g.,:

  ax^2 + bx + c

- Where **a, b** and **c** are the coefficients of the **Poly** object. Do not display the **a** or **b** terms if they have zero coefficients. Moreover, if any coefficient is negative it should be precede by a minus sign, and not a plus sign.
- In your **main()** function, declare and initialize two **Poly** objects, **q1** and **q2**, to represent the following polynomials: $3x^2 + 4x - 2$ and $-4x + 10$. Also declare a third, un-initialized **Poly** object named **sum**.

Lab Exercise 08

- Output the sum of the two polynomials to the console using the following C++ code exactly as it appears:

```
sum = q1 + q2;
cout << q1 << " : q1\n";
cout << q2 << " : q2\n";
cout << sum << " : q1+q2\n";
```

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