

COS 120 C++ Programming
Final Exam DEMO (deliverables on eLearn)

1. 7%	Convert the following if-else block to the corresponding switch block: <pre> if (c == 'y' c == 'Y') { cout << "Yes" << endl; } else if (c == 'n' c == 'N') { cout << "No" << endl; } else { cout << "Unknown" << endl; } </pre>
2. 7%	Define a function called largest that receives three numbers as parameters and returns the largest.
3. 7%	Define a function called arraysum that receives an array of real numbers and returns the sum of all elements inside it.
4. 7%	Define a void function called applyVAT which takes a variable containing a product's price and adds 20% tax to it.
5. 7%	Define the interface of a class named Person , which has two private members – name and age. Declare three constructors for the class – default constructor, two-parameter constructor and the copy constructor. Declare a destructor for that class.
6. 15%	Write a program to read the first and last name of the user. The program should then display the person's initials (the starting letters of the first and last names), the number of letters in the first and the number of letters in their last name.
7. 15%	Write a program to read a word from the user and then display it vertically, the last character appearing on the top.
8. 15%	Write a program to read a list of integers from a file called numbers.txt , which contains one number per line, and save those numbers in increasing order in a file called sorted.txt .
9. 15%	Define a class called Student which has three attributes – <i>name</i> , <i>exams</i> and <i>quizzes</i> . Add the necessary constructors, accessors and mutators. Add a member function called getFinalGrade which calculates and returns the final grade of the student as a number between 0 and 100, where quizzes make 40% and exams make 60% of that grade. Add a method called displayGrade which calls getFinalGrade above and outputs the corresponding letter for the final grade of the student. Use the following grade scale: 0-60 (F), 61-70 (D), 71-80 (C), 81-90 (B), and 91-100 (A). Write a main function to create an instance of the Student class and call the displayGrade method.
10. 15%	Define an abstract class called BaseStudent , with one abstract method called displayGrade . Change the Student class from the previous problem to inherit the BaseStudent class. Add a new class called PFStudent , which inherits the Student class and overrides the displayGrade method to output "P" if the final grade is above 60 and "F" otherwise. Write a main function in which to create instances of the Student and PFStudent classes and call the displayGrade method on each one of them.