

CS 12 - Assignment 3

Pointers

Due Friday, February 6

In this assignment you will be using pointers. Be sure to include all necessary information at the top of your program and use good commenting and style throughout. When you turn in your program, be sure to print out the proof of turn in page.

Write a program for a movie rental business. You will keep track of movies, the total number of rentals, and the total number of sales. You will allow for people to rent and return movies. You will be using functions. Some functions will require you to use parameters that are passed by reference. You may not use C++ reference parameters. You must use pointers to simulate pass-by-reference. You may not use global variables, you should pass variables as parameters.

Your program should begin by asking the new business owner how many different movies they have to rent to the user. You should then dynamically allocate an array of integers of that size. The new business has 2 copies of each movie. Your array will keep track of how many copies are available for renting at any particular moment. The movies will not be referred to by names, but by ids (a good suggestion of ids to use is 0 through `number_of_movies - 1`). The business has both old movies and new releases. Half of the movies are old movies and the other half are new releases. You should set a price for the renting of old movies and the renting of new releases. Renting new releases typically costs more than renting a movie that has been out for awhile and most people have already seen.

Your program should also keep track of the running total of movies rented and the running total of money the business has brought in.

You should include the following functions:

Display Show the movie ids and the number of copies available to rent. You will need to pass the array of movies as a parameter. An example output is shown for 5 movies:

Movie	Copies Available
0	2
1	1
2	1
3	0
4	1

Rent The user should be allowed to choose a movie to rent. They cannot rent movies that are not available. Be sure to update the status of the number of copies available. They should be able to choose as many movies as they

want to rent. Update the total number of movies the business has rented since it began and the amount the business has brought in. Be sure to pay attention to whether the movie is an old movie or a new release when updating the money total. You should pass the array of movies, the total number of rentals, and the total amount of sales.

Return In this function, the renter is returning a movie and the business is checking the movie back in. The user should specify the movie id(s) they are returning and the copies available should be updated. The business only started with two copies of each movie and thus you should check that there are never more than two copies. If someone tries to return a movie that you already have two copies of, you may want to question them about where they got the movie. You should pass the array of movies.

Late Return Here the renter is returning a movie past the time that it was due. The user should specify the movie(s) they are returning and the copies available should be updated. Each late movie invokes a \$1.00 late charge. You should pass the array of movies and the total amount of money brought in by the company.