



National University of Computer & Emerging Sciences, Karachi
Department of Computer Science
Mid-Term Examination (Spring 2021)
8th April 2021, 1:30PM – 2:30PM



Course No: CL217	Course Name: Object Oriented Programming
Instructor Name/ Names: Abeer Gauher	
Student Roll No: [REDACTED]	Section: [REDACTED]

Time Allowed: 60 minutes

Total Marks: 20

Instructions:

- Attempt all questions; read each question completely and use your question paper for rough work.
- After completion of exam, return the question paper.
- Your Student ID must be written on the paper.
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- For Exam submission: Create a folder named "your student-id" i.e. (K20-0100).
- Paste the .cpp file for each question named as Q1.cpp, Q2.cpp and on so in that folder.
- Submissions should be made in the folder on Google Classroom.

Question 1:

[Marks: 6 Time: 15 mins]

A book shop maintains details about the books in its' shop. Each book has a book id, book title, price. The details of the books can be easily viewed.

- A customer can purchase any number of copies for a particular book where the number of copies is initialized by a constructor.
- The user is required to input the book id, book title, price and number of copies that they want to purchase.
- The user is then displayed the total bill that is needed to be paid for the required book.
- The shop also keeps track of the total number of copies sold by a static function.
- Display the bill for two customers who purchase a book from the shop. Use a copy constructor to show to show the bill for the second customer.

[Marks: 6 Time: 20 mins]

Question 2:

A bank updates its customer's account at the end of each month. The bank offers two types of accounts to its customers that are savings and checking. Every customer is required to maintain a minimum balance of 1000 Rs.

- If the balance at the end of the month is at least the minimum balance, saving account members receive a 4% interest.
- If the balance at the end of the month is at least the minimum balance, checking accounts with balances of up to Rs 1,000 more than the minimum balance receive 3% interest; otherwise, the interest is 5%.

Customers are required to input their account number, account type: (s) for savings and (c) for checking and their current balance. These details are not accessible by other customers. Display the details for two customers along with the interest received.

[Marks: 8 Time: 25 mins]

Question 3:

A shop owner maintains a record of the items in the store and the discounted price for each of those items.

- The item details are stored separately and each item has an item number, item name and the price of the item.
- The item number for an item does not change.
- The discount details are maintained separately that include the discount percent for each item and the price after the discount.

The user is required to input the item number, item name, price and the discount percent. The discount price will then be displayed for the items. Display the item details with their discounted price for three items in the store.

Mid Examination

Paper II

09th April 2021, 08:30 am – 09:30 am

Course Code: CS 217

Course Name: Object-oriented Programming Lab

Instructor Name / Names: Muhammad Ali Fatmi / Abeer Gauher

Student Roll No:

Section No:

Instructions:

- Attempt all questions, read each question completely and use your question paper for rough work.
- After completion of exam, return the question paper.
- Your Student ID must be written on the paper.
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- For Exam submission: Create a folder named "your student-id" i.e. (K20-0100).
- Paste the .cpp file for each question named as Q1.cpp, Q2.cpp and on so in that folder.
- Submissions should be made in the folder on Google Classroom.

Max Marks: 20 points

Time: 60 minutes.

[Marks: 6 Time: 15 mins]

Question 1:

Create a class named 'Rectangle' with two data members- length and breadth and a function to calculate the area which is 'length*breadth'. The class has two constructors which are

- Having no parameter - values of both length and breadth are assigned zero.
- Having two numbers as parameters - the two numbers are assigned as length and breadth respectively.
- Now, create objects of the 'Rectangle' class having none and two parameters and print their areas, also create copy constructor of the default constructor and show the result.
- Show the total no of objects created in the program.

[Marks: 6 Time: 20 mins]

Question 2:

Write a program for Video/Movie Website, which provides services to watch and download movies. Your Program should ask the Customer Name, Customer Type, no of movies user wants to purchase and movie release year. It offers 3 types of memberships: Premium, Gold and Silver. Premium, gold and silver members receive a discount of 20%, 15%, and 10%. Customers without membership receive no discount. Program Store 5 movies and their ratings and tells if the movie is available or not Your Program shall compute the total bill. Note: customer can purchases multiple movies.

Year Release 2021: Rs 1000 /movie
 Year Release 2018-2020 Rs. 700/ movie
 Year Release 2014-2017 Rs. 500/movie

[Marks: 8 Time: 25 mins]

Question 3:

An ABC University is offering admissions for MS and BS Program, for MS Admission your program should take xi, xii, BS and aptitude test marks of student. For BS Admission your program should take xi, xii, and aptitude test marks of student. Admission must be granted if total marks is greater than 50%. Students have some same data members like name, id, Contact Number. Your program must return their respective Remarks & Total marks.

For BS Admission Total Marks= 25% of xi Marks+25% of xii Marks +50% of aptitude test marks.
 For MS Admission Total Marks= 10% of xi Marks+15% of xii Marks +30% of BS marks+50% of aptitude test marks.



National University of Computer & Emerging Sciences, Karachi
Spring - 2021 CS-Department
Mid Examination

Paper I

09th April 2021, 08:30 am - 09:30 am

Course Code: CS 217	Course Name: Object-oriented Programming Lab
Instructor Name / Names: Muhammad Ali Fatmi / Abeer Gauher	
Student Roll No: 20171728	Section No:

Instructions:

- Attempt all questions, read each question completely and use your question paper for rough work.
- After completion of exam, return the question paper.
- Your Student ID must be written on the paper.
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- For Exam submission: Create a folder named "your student-id" i.e. (K20-0100).
- Paste the .cpp file for each question named as Q1.cpp, Q2.cpp and on so in that folder.
- Submissions should be made in the folder on Google Classroom.

Time: 60 minutes.

Max Marks: 20 points

[Marks: 6 Time: 15 mins]

Question 1:

The class Movie is started below. An instance of class Movie represents a film. This class has the following three class variables: title, studio, rating & static objectCount type int.

- Write a default constructor for the class Movie, which initializes all the class variables to null/0.
- Write a second constructor for the class Movie, which takes a String representing the title of the movie and a String representing the studio as its arguments, and sets the respective class variables to these values, while the class variable rating is set to "PG".
- Write a piece of code that creates an instance of the class Movie with the title "Casino Royale", the studio "Eon Productions", and the rating "PG13".
- Create a copy constructor of the default constructor and show the result of Part c.
- Show the total no. of objects created in the program.

[Marks: 6 Time: 20 mins]

Question 2:

Write a discount system for an Amusement Park, which provides different amusing activities. It offers 2 types of Customer tickets Adult and Child. Your Program should ask the number of Children and Adults. Your program also offers 3 types of memberships: Premium, Gold and Silver. Premium, gold and silver members receive a discount of 20%, 15%, and 10%. Your Program shall compute the total bill if a customer purchases \$x of services, for a visit. Note customer may avail multiple amusement activities. Their charges should be receptive to their types.

TENNIS COURT: Rs. 1000
HORSE RIDING: Rs. 500
SNOWFALL PLAY AREA: Rs. 1500

Adult Ticket Charges: Rs. 500
Child Ticket Charges Rs. 1000

[Marks: 8 Time: 25 mins]

Question 3:

Suppose ABC University has to manage records of CS students using some custom software. Student class that features a pass () method that returns true if and only, if the student has passed all courses (let's assume 5). The department suddenly starts teaching MS students, who only need 3 courses to pass. Using inheritance, show how the software can continue to keep all Student records for both Degree Programs. Students have some same data members like name, id, and Enrollment year. Your program must return their respective grades & Total marks.

2021/4/9 10:01