American International University-Bangladesh

Object Oriented Programming 1

Assignment: 1 [27 Feb, 2020]

Student Name: **Student Id:** **Sec:**

Questions:

Part-1 : Data type, variable declaration, assignment operation, basic arithmetic operation, type casting
1. Write a Java program to print the sum, multiply, subtract, divide and remainder of two numbers.
Part-2: Decision making statements : if, if-else, if-elseif-else, nested if, switch case
2. Write a Java program to find the largest number among two numbers. 3. Write a Java program to find if a given year is a leap year or not. 4. Write a Java program to find the largest number among three numbers. 5. Write a Java Program to check whether a char is vowel or consonant using switch case.
Part-3: Looping statements : for, while, do-while
6. Write a Java program to find if a given number is a prime number or not. 7. Write a Java program to compute the sum & average of a 5 digit integer. (Ex: 25613, sum of 25613 => 2+5+6+1+3 = 17 and average 17/5 = 3.4
Part-4: Branching statements : break, continue, return
8. Write a Java program to print all prime factors of a number. (Require nested loop) (Ex: Prime factor of 315 is 3, 3, 5, 7) 9. Write a Java program to find if a give number is even or odd. (use break statement) 10. Write a Java program to find if a give number is even or odd. (use continue statement)
Part-5: Arrays
11. Write a Java program to store 10 integer values in an array and calculate the sum and average. 12. Write a Java program to find max and min value among 10 values stored in an array. 13. Write a Java program to store values in reverse order to an array from another array. (Ex: arr1 has 10, 20 and 15, so arr2 will contain 15, 20, and 10). 14. Write a Java program to declare a 2-D array, initialize it with random values and print all the values.
Part-6: Strings
15. Write a Java program to declare two variables where data type is String, initialize one with new keyword and another without new keyword. Compare these two strings if they are equal or not. 16. Write a Java program to find the length of string. (Ex: String st = “Hello”; length of st is 5) 17. Write a Java program to print all the characters present in a string (use charAt()) (Ex: String st = “Hello”; print all the characters in each line ‘H’, ‘e’, ‘l’, ‘l’, ‘o’) 18. Write a Java program to remove all the whitespaces present in a string. (Ex: String st = “ Hello World ”); your result should be “Hello World” 19. Write a Java program to reverse a string. (Do not use built in function for reverse operation) 20. Write a Java program to find if two strings are palindrome or not.
Part-7: Classes & objects, methods, constructors, static
21. Write a Java program to create a class called Rectangle with two instance variable, one is height and another is width. Create multiple objects of Rectangle class from main method and assign values to instance variables.

22. Following Question-21 create setter and getter methods for instance variables. Now create multiple objects and assign values via setter methods and print them via getter methods
23. Following Question-22 create default constructor and parameterized constructor for Rectangle class and initialize objects with parametrized constructor. Print the values of instance variables via getter methods.
24. Following Question-23 create a class variable or static variable to count how many objects are creating of Rectangle class. (use static keyword)
25. Following Qustion-24 create a method called area() in Rectangle class to calculate the area of a Rectangle. Create multiple objects of Rectangle class and calculate area.

Part-8: Encapsulation

26. Following Question 21 do the necessary things to Rectangle which supports encapsulation concept.

Part- 9: User defined package

27. Following Qustion-24 create a package org, in org package shift the Rectangle class and execute it.
28. Following Qustion-27 now create two sub package of org called main and rectangle. Separate main class shift it to org.main package and shift rectangle class to org.rectangle.

Part-10: Inheritance

29. Write a Java program to create an Animal class and Mammal class. Mammal will inherit Animal. Try to access the properties of Animal from mammal object.
30. Practice the example we did in class Inheritance with Package and test all the access modifiers by making variables and methods public, private, protected, default.