IT1050 – Object Oriented Concepts   **Semester 1, 2023**

Exercise 1 – Identify similar words

Identify the similar words for the following from given list.

i.   Class
ii. Object
iii. Property
iv. Method

i   iv   i   iv   ii   iv   ii   ii   iv
Blueprint, Function, State, Behavior, Member function, Instance, Data member, Feature, Variable, Template, Characteristic, Operation, Attribute
iii   i   iii   iv   iii

Exercise 2 – Identify Object Oriented Concepts

A School has classes from grade 1 to grade 11. Each grade has up to 5 classes labeled as Grade Xa, GradeXb (e.g. Grade 4a, Grade4b). Each student has to do up to 10 subjects per term, such as English, Maths, Science, Health. Each class has a Teacher in charge. Each subject is taught by several teachers. Kusum, Manel, Aravinda and Kushil are teachers of this school. Amali, Dhushmanthi, Akalanka, Mihiri are students of this school. Each student has a unique admission number. In addition details like address, guardian name and address, contact number of guardian, date of birth are stored when the student registers. The class teacher marks the attendance of his/her class in the morning. The term test examinations marks of the students are also handled by the class teacher. Teachers when registered to school have their contact details, address, educational qualifications, previous experience in teaching stored in a file at the principal's office.   A teacher should be able to generate the reportSummary() of each student, once the marks are entered for each student using the function enterMarks(). Teacher and subject details should be captured using the functions registerTeacher(), getTeacherDetails(), getTeacherList(), assignTeacherSubject(), getTeachersForSubject().

Select the correct answer from the list of answers:

Properties, methods, encapsulation, information hiding, interfaces, abstraction, interface

1. Grouping Kusum, Manel, Aravinda and Kushil as teachers is an example of ….abstraction…………
2. Grouping Amali, Dhushmanthi, Akalanka, Mihiri as students is an example of …abstraction……………

3. Identifying that for examination system the properties of a student should be admission number, marks, subjects and leaving out details like guardian name and address, contact number is called ……Properties…………………

4. A class can capture both ……Properties……………… and …….Methods……………

5. Leaving out unnecessary details and capturing the essence of objects and grouping them into concepts is called ……abstraction…………

6. Combining student properties such as admission number, marks, subjects and functions (methods) reportSummary(), enterMarks() is called ….encapsulation………

7. Making it compulsory the use of a public functions (methods) such as enterStudentDetails(), enterMarks(), getStudentDetails() to access students properties as methods of the Student Class Instead of allowing admission number, marks, subjects be directly accessed in a student class is called ..encapsulation………… This is supported through ..information hiding…..

8. Public functions (methods) in a class such as enterMarks(), getStudentDetails() are also called …interfaces……………

9. An …..interface……………… is a contractual agreement that is there between a client program and a class.

Exercise 3 – Identify objects, classes, properties and methods

A School has classes from grade 1 to grade 11. Each grade has up to 5 classes labeled as Grade Xa, GradeXb (e.g. Grade 4a, Grade4b). Each student has to do up to 10 subjects per term, such as English, Maths, Science, Health. Each class has a Teacher in charge. Each subject is taught by several teachers. Kusum, Manel, Aravinda and Kushil are teachers of this school. Amali, Dhushmanthi, Akalanka, Mihiri are students of this school. Each student has a unique admission number. In addition details like address, guardian name and address, contact number of guardian, date of birth are stored when the student registers. The class teacher marks the attendance of his/her class in the morning. The term test examinations marks of the students are also handled by the class teacher. Teachers when registered to school have their contact details, address, educational qualifications, previous experience in teaching stored in a file at the principal's office.   A teacher should be able to generate the reportSummary() of each student, once the marks are entered for each student using the function enterMarks(). Teacher and subject details should be captured using the functions registerTeacher(), getTeacherDetails(), getTeacherList(), assignTeacherSubject(), getTeachersForSubject().

i. Identify the objects in the above description.
ii. Group those objects into classes.
iii. Identify the properties and methods for the classes in question no ii.

obj:

Kusum, Manel, Aravinda and Kushil

grade 1 to grade 11

English, Maths, Science, Health

Amali, Dhushmanthi, Akalanka, Mihiri

teacher

name
contact details
address
educational qualifications
previous experience

reportSummary()
registerTeacher(),
getTeacherDetails()
getTeacherList()
assignTeacherSubject()
getTeachersForSubject().

Student

Name
address
guardian name & address
contact number of guardian
date of birth

enterMarks()

Class

Grade
label
Teacher

setTIC()

subject

name
Teacher

setTeacher()