**MUTISO MWANGANGI**

**ENE211-0026/2020**

**EEE B2**

**COMPUTER PROGRAMMING2 ASSIGNMENT**

**QUESTION 1**

#include <iostream>

#include <string>

using namespace std;

// base class

class Computer {

protected:

string name;

int memory;

int serialnumber;

public:

void setName(string n) {

name = n;

}

void setMemory(int m) {

memory = m;

}

void setSerialnumber(int s) {

serialnumber = s;

}

void printSpecs() {

cout << "Name: " << name << endl;

cout << "Memory: " << memory << " GB" << endl;

cout << "Serialnumber: " << serialnumber<< endl;

}

};

// derived class 1

class Server : public Computer {

private:

int numCores;

public:

void setNumCores(int c) {

numCores = c;

}

void printSpecs() {

Computer::printSpecs();

cout << "Number of Cores: " << numCores << endl;

}

};

// derived class 2

class Client : public Computer {

private:

int monitorSize;

public:

void setMonitorSize(int s) {

monitorSize = s;

}

void printSpecs() {

Computer::printSpecs();

cout << "Monitor Size: " << monitorSize << " inches" << endl;

}

};

int main() {

Server myServer;

myServer.setName("Server");

myServer.setMemory(32);

myServer.setNumCores(16);

cout << "Server Specs:" << endl;

myServer.printSpecs();

Client myClient;

myClient.setName("Client");

myClient.setMemory(500);

myClient.setMonitorSize(19);

cout << "Client Specs:" << endl;

myClient.printSpecs();

return 0;

}

**QUESTION 2**

1. #include <string>

class Person {

private:

int age;

string firstname;

string lastname;

public:

Person(int age,string firstname,string lastname) {

this->age = age;

this->firstname = firstname;

this->lastname = lastname;

}

int getAge() {

return age;

}

void setAge(int age) {

this->age = age;

}

string getFirstname() {

return firstname;

}

void setFirstname(string firstname) {

this->firstname = firstname;

}

string getLastname() {

return lastname;

}

void setLastname(string lastname) {

this->lastname = lastname;

}

};

(ii)

#include <iostream>

#include <string>

using namespace std;

class Person {

protected:

string name;

int age;

char gender;

public:

Person(string name, int age, char gender) {

this->name = name;

this->age = age;

this->gender = gender;

}

void display() {

cout << "Name: " << name << endl;

cout << "Age: " << age << endl;

cout << "Gender: " << gender << endl;

}

};

class Student : public Person {

private:

string institution;

int year;

string registration\_number;

public:

Student(string name, int age, char gender, string institution, int year, string registration\_number)

: Person(name, age, gender) {

this->institution = institution;

this->year = year;

this->registration\_number = registration\_number;

}

void display() {

Person::display();

cout << "Institution: " << institution << endl;

cout << "Year: " << year << endl;

cout << "Registration Number: " << registration\_number << endl;

}

};

int main() {

Student s("Mutiso Mwangangi", 22, 'M', "University of JKUAT", 3, "ENE211-0026/2020");

s.display();

return 0;

}

**QUESTION 3**

#include <iostream>

#include <string>

using namespace std;

// base class

class Student {

public:

int studentID;

string name;

string email;

void displayDetails() {

cout << "Student ID: " << studentID << endl;

cout << "Name: " << name << endl;

cout << "Email: " << email << endl;

}

};

// derived class for ICT students

class ICTStudent : public Student {

public:

string courseType; // Certificate, Diploma, BSC-IT

int stage; // 1, 2, 3 for BSC-IT students

string subjects; // comma-separated list of subjects

void displayDetails() {

Student::displayDetails(); // call base class method

cout << "Course Type: " << courseType << endl;

cout << "Stage: " << stage << endl;

cout << "Subjects: " << subjects << endl;

}

void calculateGrades() {

// code to calculate grades for ICT students

}

};

// main function

int main() {

// create an ICT student object and populate its attributes

ICTStudent s;

s.studentID = 2110026;

s.name = "Mutiso Mwangangi";

s.email = "mucharles099@gmail.com";

s.courseType = "BSC-IT";

s.stage = 3;

s.subjects = "Programming, Database Management, Web Development";

// display the student details and calculate their grades

s.displayDetails();

s.calculateGrades();

return 0;

}