University of Central Punjab

**Faculty of Information Technology**

# Object Oriented Programming

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| **Mock Exam** | |  |
| **Topic** | Virtual and pure virtual functions + Abstract class |
| **Objective** | The basic purpose of this lab is to implement the concept of virtual and pure virtual function and to understand what is an abstract class |
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**Instructions:**

* Indent your code.
* Comment your code.
* Use meaningful variable names.
* Plan your code carefully on a piece of paper before you implement it.
* Name of the program should be same as the task name. i.e. the first program should be Task\_1.cpp

**Students are required to work in multiple files i.e .h and .cpp**

**Task 1:**

Please read the following code carefully and then decide classes and their relationships and then do the following:

1. Draw a Class UML Diagram and submit to the Instructor
2. Declare all classes in their respective “.h” files (**­No function should have code, only declaration)**
3. Define (code) all classes in their respective “.cpp” files
4. Write the Driver function
5. Compile
6. Run and submit screen shots

**Driver Program:**

Rectangle r(3,2);

Triangle t(3,2);

Circle c(3.2);

Shape \*s[3];

\*s[0] = r;

\*s[1] = t;

\*s[2] = r;

Circle c2(3.3);

Shape \* p = &c2;

for(int i=0;i<3;i++)

{

Shape \* sp = s[i];

cin >> \*sp;

cout << \*sp;

cout << sp->getArea();

if(\*sp != \*p)

{

\*sp = \*p;

}

}

**Task2: (same as task 1 but with additional operators and may be a dynamic array as a member**