****

**Course Title: Programming Language II**

**Course Code: CSE 111**

**Lab Assignment no: 2**

**Question 1**

**Write a class that for running the following codes:**

**[You are not allowed to change the code below]**

**#Write your class code here**

**data\_type1 = DataType(‘Integer’, 1234)**

**print(data\_type1.name)**

**print(data\_type1.value)**

**print('=====================')**

**data\_type2 = DataType(‘String’, ‘Hello’)**

**print(data\_type2.name)**

**print(data\_type2.value)**

**print('=====================')**

**data\_type3 = DataType(‘Float’, 4.0)**

**print(data\_type3.name)**

**print(data\_type3.value)**

**Output:**

**Integer**

**1234**

**=====================**

**String**

**Hello**

**=====================**

**Float**

**4.0**

**Subtasks:**

1. **Create a class named DataType with the required constructor.**
2. **Assign name and values in constructor according to the output.**

**Question 2**

**Design a class called Flower with the instance variables so that after executing the following line of code the desired result shown in the output box will be printed.**

**[You are not allowed to change the code below]**

**#Write your class code here**

**flower1 = Flower()**

**flower1.name="Rose"**

**flower1.color="Red"**

**flower1.num\_of\_petal=6**

**print("Name of this flower:", flower1.name)**

**print("Color of this flower:",flower1.color)**

**print("Number of petal:",flower1.num\_of\_petal)**

**print(“=====================”)**

**flower2 = Flower()**

**flower2.name="Orchid"**

**flower2.color="Purple"**

**flower2.num\_of\_petal=4**

**print("Name of this flower:",flower2.name)**

**print("Color of this flower:",flower2.color)**

**print ("Number of petal:",flower2. num\_of\_petal)**

**#Write the code for subtask 2 and 3 here**

**Output:**

**Name of this flower: Rose**

**Color of this flower: Red**

**Number of petal: 6**

**=====================**

**Name of this flower: Orchid**

**Color of this flower: Purple**

**Number of petal: 4**

**Subtask:**

**1) Design the class Flower with default constructor to get the above output.**

**2) At the end of the given code, also print the address of flower1 and flower2 objects.**

**3) Do they point to the same address? Print (‘they are same’ or ‘they are different’) at**

**the very end to answer this question.**

**Question 3**

**Design a class Joker with parameterized constructor so that the following line of code prints the result shown in the output box.**

**[You are not allowed to change the code below]**

**#Write your class code here**

**j1 = Joker('Heath Ledger', 'Mind Game', False)**

**print(j1.name)**

**print(j1.power)**

**print(j1.is\_he\_psycho)**

**print(“=====================”)**

**j2 = Joker('Joaquin Phoenix', 'Laughing out Loud', True)**

**print(j2.name)**

**print(j2.power)**

**print(j2.is\_he\_psycho)**

**print(“=====================”)**

**if j1 == j2:**

**print('same')**

**else:**

**print('different')**

**j2.name = 'Heath Ledger'**

**if j1.name == j2.name:**

**print('same')**

**else:**

**print('different')**

**#Write your code for 2,3 here**

**Subtask:**

**1) Design the class using a parameterized constructor.**

**2) The first if/else block prints the output as ‘different’, but why? Explain your answer and print your explanation at the very end.**

**3) The second if/else block prints the output as ‘same’, but why? Explain your answer and print your explanation at the very end.**

**Question 4**

**Design a class called Pokemon using a parameterized constructor so that after executing the following line of code the desired result shown in the output box will be printed. First object along with print has been done for you, you also need to create other objects and print accordingly to get the output correctly.**

**[You are not allowed to change the code below]**

**#Write your code for class here**

**team\_pika = Pokemon('pikachu', 'charmander', 90, 60, 10)**

**print('=======Team 1=======')**

**print('Pokemon 1:',team\_pika.pokemon1\_name, team\_pika.pokemon1\_power)**

**print('Pokemon 2:',team\_pika.pokemon2\_name, team\_pika.pokemon2\_power)**

**pika\_combined\_power = (team\_pika.pokemon1\_power + team\_pika.pokemon2\_power) \* team\_pika.damage\_rate**

**print('Combined Power:', pika\_combined\_power)**

**#Write your code for subtask 2,3,4 here**

**Output:**

**=======Team 1=======**

**Pokemon 1: pikachu 90**

**Pokemon 2: charmander 60**

**Combined Power: 1500**

**=======Team 2=======**

**Pokemon 1: bulbasaur 80**

**Pokemon 2: squirtle 70**

**Combined Power: 1350**

**Subtask:**

**1) Design the Pokemon class using a parameterized constructor. The 5 values that are being passed through the constructor are pokemon 1 name, pokemon 2 name, pokemon 1 power, pokemon 2 power, damage rate respectively.**

**After designing the class, if you run the above code the details in Team 1 will be printed.**

**2) Create an object named team\_bulb and pass the value ‘bulbasaur’, ‘squirtle’, 80, 70, 9 respectively.**

**3) Use print statements accordingly to print the desired result of Team 2.**

**Note: Power is always being calculated using the instance variables. Example:**

**(team\_pika.pokemon1\_power + team\_pika.pokemon2\_power) \* team\_pika.damage\_rate**

**Question 5**

**Design the Player class so that the code gives the expected output.**

**[You are not allowed to change the code below]**

**# Write Your Class Code Here**

**player1 = Player()**

**player1.name = "Ronaldo"**

**player1.jersy\_number = 9**

**player1.position = "Striker"**

**print("Name of the Player:", player1.name)**

**print("Jersey Number of player:", player1.jersy\_number)**

**print("Position of player:", player1.position)**

**print(“===========================”)**

**player2 = Player()**

**player2.name = "Neuer"**

**player2.jersy\_number = 1**

**player2.position = "Goal Keeper"**

**print("Name of the player:", player2.name)**

**print("Jersey Number of player:", player2.jersy\_number)**

**print("Position of player:", player2.position)**

**Output:**

**Name of the Player: Ronaldo**

**Jersy Number of player: 9**

**Position of player: Striker**

**===========================**

**Name of the player: Neuer**

**Jersy Number of player: 1**

**Position of player: Goal Keeper**

**Question 6**

**Design the Country class so that the code gives the expected output.**

**[You are not allowed to change the code below]**

**# Write your Class Code here**

**country = Country()**

**print('Name:',country.name)**

**print('Continent:',country.continent)**

**print('Capital:',country.capital)**

**print('Fifa Ranking:',country.fifa\_ranking)**

**print('===================')**

**country.name = “Belgium”**

**country.continent = “Europe”**

**country.capital = “Brussels”**

**country.fifa\_ranking = 1**

**print('Name:',country.name)**

**print('Continent:',country.continent)**

**print('Capital:',country.capital)**

**print('Fifa Ranking:',country.fifa\_ranking)**

**Output:**

**Name: Bangladesh**

**Continent: Asia**

**Capital: Dhaka**

**Fifa Ranking: 187**

**===================**

**Name: Belgium**

**Continent: Europe**

**Capital: Brussels**

**Fifa Ranking: 1**

**Question 7**

**Write the DemonSlayer class so that the code gives the expected output.**

**[You are not allowed to change the code below]**

**# Write your Class Code here**

**tanjiro = DemonSlayer("Tanjiro", "Water Breathing", 10, 10)**

**print('Name:',tanjiro.name)**

**print('Fighting Style:',tanjiro.style)**

**print(f'Knows {tanjiro.number\_of\_technique} technique(s) and has killed {tanjiro.kill} demon(s)')**

**print('===================')**

**zenitsu = DemonSlayer("Zenitsu", "Thunder Breathing", 1, 4)**

**print('Name:',zenitsu.name)**

**print('Fighting Style:',zenitsu.style)**

**print(f'Knows {zenitsu.number\_of\_technique} technique(s) and has killed {zenitsu.kill} demon(s)')**

**print('===================')**

**inosuke = DemonSlayer("Inosuke", "Beast Breathing", 5, 7)**

**print('Name:',inosuke.name)**

**print('Fighting Style:',inosuke.style)**

**print(f'Knows {inosuke.number\_of\_technique} technique(s) and has killed {inosuke.kill} demon(s)')**

**print('===================')**

**print(f'{tanjiro.name}, {zenitsu.name}, {inosuke.name} knows total {tanjiro.number\_of\_technique + zenitsu.number\_of\_technique + inosuke.number\_of\_technique} techniques')**

**print(f'They have killed total {tanjiro.kill + zenitsu.kill + inosuke.kill} demons')**

**Output:**

**Name: Tanjiro**

**Fighting Style: Water Breathing**

**Knows 10 technique(s) and has killed 10 demon(s)**

**===================**

**Name: Zenitsu**

**Fighting Style: Thunder Breathing**

**Knows 1 technique(s) and has killed 4 demon(s)**

**===================**

**Name: Inosuke**

**Fighting Style: Beast Breathing**

**Knows 5 technique(s) and has killed 7 demon(s)**

**===================**

**Tanjiro, Zenitsu, Inosuke knows total 16 techniques**

**They have killed total 21 demons**

**Question 8**

**Write the box class so that the code gives the expected output.**

| ***#Write your class code here***  **print("Box 1")**  **b1 = box([10,10,10])**  **print("=========================")**  **print("Height:", b1.height)**  **print("Width:", b1.width)**  **print("Breadth:", b1.breadth)**  **print("-------------------------")**  **print("Box 2")**  **b2 = box((30,10,10))**  **print("=========================")**  **print("Height:", b2.height)**  **print("Width:", b2.width)**  **print("Breadth:", b2.breadth)**  **b2.height = 300**  **print("Updating Box 2!")**  **print("Height:", b2.height)**  **print("Width:", b2.width)**  **print("Breadth:", b2.breadth)**  **print("-------------------------")**  **print("Box 3")**  **b3 = b2**  **print("Height:", b3.height)**  **print("Width:", b3.width)**  **print("Breadth:", b3.breadth)** | **Output:**  **Box 1**  **Creating a Box!**  **Volume of the box is 1000 cubic units.**  **=========================**  **Height: 10**  **Width: 10**  **Breadth: 10**  **---------------------------------------------**  **Box 2**  **Creating a Box!**  **Volume of the box is 3000 cubic units.**  **=========================**  **Height: 30**  **Width: 10**  **Breadth: 10**  **Updating Box 2!**  **Height: 300**  **Width: 10**  **Breadth: 10**  **---------------------------------------------**  **Box 3**  **Height: 300**  **Width: 10**  **Breadth: 10** |
| --- | --- |

**Question 9**

**Design the required class from the given code and the outputs.**

**[You are not allowed to change the code below]**

**Hint:**

**Number of the border characters for the top and the bottom**

**= 1**

**+ Number of spaces between the left side border and the first character of the button name**

**+ Length of the button name**

**+ Number of spaces between the right side border and the last character of the button name**

**+ 1**

***NOTE: Don’t count the space or any character from the button representation to solve this problem.***

***#Write your class code here***

**word = "CANCEL"**

**spaces = 10**

**border = 'x'**

**b1 = buttons(word, spaces, border)**

**print("=======================================================")**

**b2 = buttons("Notify",3, '!')**

**print("=======================================================")**

**b3 = buttons('SAVE PROGRESS', 5, '$')**

**Output:**

**CANCEL Button Specifications:**

**Button name: CANCEL**

**Number of the border characters for the top and the bottom: 28**

**Number of spaces between the left side border and the first character of the button name: 10**

**Number of spaces between the right side border and the last character of the button name: 10**

**Characters representing the borders: x**

**xxxxxxxxxxxxxxxxxxxxxxxxxxxx**

**x                CANCEL                x**

**xxxxxxxxxxxxxxxxxxxxxxxxxxxx**

**=========================================================**

**Notify Button Specifications:**

**Button name: Notify**

**Number of the border characters for the top and the bottom: 14**

**Number of spaces between the left side border and the first character of the button name: 3**

**Number of spaces between the right side border and the last character of the button name: 3**

**Characters representing the borders: !**

**!!!!!!!!!!!!!!**

**! Notify !**

**!!!!!!!!!!!!!!**

**=========================================================**

**SAVE PROGRESS Button Specifications:**

**Button name: SAVE PROGRESS**

**Number of the border characters for the top and the bottom: 25**

**Number of spaces between the left side border and the first character of the button name: 5**

**Number of spaces between the right side border and the last character of the button name: 5**

**Characters representing the borders: $**

**$$$$$$$$$$$$$$$$$$$$$$$$$**

**$       SAVE PROGRESS        $**

**$$$$$$$$$$$$$$$$$$$$$$$$$**

**Question 10**

**A class has been designed for this question. Solve the questions to get the desired result as shown in the output box.**

**[You are not allowed to change the code below]**

**class Wadiya():**

**def \_\_init\_\_(self):**

**self.name = 'Aladeen'**

**self.designation = 'President Prime Minister Admiral General'**

**self.num\_of\_wife = 100**

**self.dictator = True**

**#Write your code for subtask 1, 2, 3 and 4 here**

**Output:**

**Part 1:**

**Name of President: Aladeen**

**Designation: President Prime Minister Admiral General**

**Number of wife: 100**

**Is he/she a dictator: True**

**Part 2:**

**Name of President: Donald Trump**

**Designation: President**

**Number of wife: 1**

**Is he/she a dictator: False**

**Subtask:**

**1) Create an object named wadiya.**

**2) Use the object to print the values as shown in part 1 (Also print the sentence Part 1)**

**3) Use the same object to change and print the values in part 2 (Also print the sentence Part 2)**

**4) Did changing the instance variable values using the same object, affect the previous values of Part 1? (Print ‘previous information lost’ or ‘No, changing had no effect on previous value’)**

**Question 11**

**Write the output of the following code:**

| **1** | **class Human:** | **Output** |
| --- | --- | --- |
| **2** | **def \_\_init\_\_(self):** |  |
| **3** | **self.age = 0** |  |
| **4** | **self.height = 0.0** |  |
| **5** |  |  |
| **6** | **h1 = Human()** |  |
| **7** | **h2 = Human()** |  |
| **8** | **h1.age = 21** |  |
| **9** | **h1.height = 5.5** |  |
| **10** | **print(h1.age)** |  |
| **11** | **print(h1.height)** |  |
| **12** | **h2.height = h1.height - 3** |  |
| **13** | **print(h2.height)** |  |
| **14** | **h2.age = h1.age** |  |
| **15** | **h1.age += h1.age** |  |
| **16** | **print(h1.age)** |  |
| **17** | **h2 = h1** |  |
| **18** | **print(h2.age)** |  |
| **19** | **print(h2.height)** |  |
| **20** | **h1.age += h1.age** |  |
| **21** | **h2.height += h2.height** |  |
| **22** | **print(h1.age)** |  |
| **23** | **print(h1.height)** |  |
| **24** | **h2.age += h2.age** |  |
| **25** | **h1.age = h2.age** |  |
| **26** | **print(h2.age)** |  |

**Question 12**

| **1** | **class Student:** | **Output** |
| --- | --- | --- |
| **2** | **def \_\_init\_\_(self):** |  |
| **3** | **self.name = None** |  |
| **4** | **self.cgpa = 0.0** |  |
| **5** | **s1 = Student()** |  |
| **6** | **s2 = Student()** |  |
| **7** | **s3 = None** |  |
| **8** | **s1.name = "Student One"** |  |
| **9** | **s1.cgpa = 2.3** |  |
| **10** | **s3 = s1** |  |
| **11** | **s2.name = "Student Two"** |  |
| **12** | **s2.cgpa = s3.cgpa + 1** |  |
| **13** | **s3.name = "New Student"** |  |
| **14** | **print(s1.name)** |  |
| **15** | **print(s2.name)** |  |
| **16** | **print(s3.name)** |  |
| **17** | **print(s1.cgpa)** |  |
| **18** | **print(s2.cgpa)** |  |
| **19** | **print(s3.cgpa)** |  |
| **20** | **s3 = s2** |  |
| **21** | **s1.name = "old student"** |  |
| **22** | **s2.name = "older student"** |  |
| **23** | **s3.name = "oldest student"** |  |
| **24** | **s2.cgpa = s1.cgpa - s3.cgpa + 4.5** |  |
| **25** | **print(s1.name)** |  |
| **26** | **print(s2.name)** |  |
| **27** | **print(s3.name)** |  |
| **28** | **print(s1.cgpa)** |  |
| **29** | **print(s2.cgpa)** |  |
| **30** | **print(s3.cgpa)** |  |

**Question 13**

**Write the output of the following code:**

| **1** | **class Ninja:** | **Output** |
| --- | --- | --- |
| **2** | **def \_\_init\_\_(self):** |  |
| **3** | **self.rank = 0** |  |
| **4** | **self.stamina = 0.0** |  |
| **5** |  |  |
| **6** | **naruto = Ninja()** |  |
| **7** | **yellow\_flash = Ninja()** |  |
| **8** | **naruto.rank = 1** |  |
| **9** | **naruto.stamina = 95.0** |  |
| **10** | **print(naruto.rank)** |  |
| **11** | **print(naruto.stamina)** |  |
| **12** | **yellow\_flash.stamina = naruto.stamina - 2** |  |
| **13** | **print(yellow\_flash.stamina)** |  |
| **14** | **yellow\_flash.rank += (naruto.rank + 1)** |  |
| **15** | **print(yellow\_flash.rank)** |  |
| **16** | **minato = yellow\_flash** |  |
| **17** | **print(minato.rank)** |  |
| **18** | **print(minato.stamina)** |  |
| **19** | **naruto.rank = minato.rank - 1** |  |
| **20** | **naruto.stamina = yellow\_flash.stamina + 3** |  |
| **21** | **print(naruto.rank)** |  |
| **22** | **print(naruto.stamina)** |  |
| **23** | **naruto.rank = -(-naruto.rank)** |  |
| **24** | **yellow\_flash.stamina = -(-minato.stamina)** |  |
| **25** | **print(naruto.rank)** |  |
| **26** | **print(minato.stamina)** |  |