Graphical user interface, text, application

Description automatically generated

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**Task 1:**

**Implement a class ‘Student’ that we already discussed in classes & labs.**

**The characteristics of class is given below:**

**Data Members:**

* **name : string *(Stores the student’s name)***
* **sap : int *(Stores the student’s SAP Id)***
* **phone : string *(Stores the student’s phone number)***
* **dob : string *(Stores the student’s date of birth)***

**Functions:**

* **Default Constructor**
  + ***Set all values according to your data i.e. name, sap, phone, date of birth.***
  + ***Print a message “Default Constructor”***
* **Parameterized Constructor (string, int, string, string)**
  + ***Set all values according to the given parameters***
  + ***Print a message “Parameterized Constructor # 1”***
* **Parameterized Constructor (string, string, string, int)**
  + ***Set all values according to the given parameters***
  + ***Print a message “Parameterized Constructor # 2”***
* **Destructor**
  + ***Print a message “Default Constructor”***
* **void print()**
  + ***Prints all data members i.e. name, sap, phone, date of birth***

**Write a main function that does following and answer the following questions:**

**1. Create a pointer-based object ‘s1’ with default constructor. Run code and write output below.**

|  |
| --- |
| **Write Output Here:**  Default Constructor |

**2. Create a pointer-based object ‘s2’ with these values. Run code and write output below.**

**Name = Akhtar Saleem**

**SAP = 5639**

**Phone = 0300-1234567**

**DOB = 15/05/1995**

|  |
| --- |
| **Write Output Here:**  Default Constructor  Parameterized Constructor # 1 |

**3. Call print function with object ‘s1’ and write output below:**

|  |
| --- |
| **Write Output Here:**  Default Constructor  Parameterized Constructor # 1  --Print Function--  Name is: Husnain Momin  SAP: 38589  Contact No.: 0324-7917046  Date of Birth: 28/10/2002 |

**4. Call print function with object ‘s2’ and write output below:**

|  |
| --- |
| **Write Output Here:**  Default Constructor  Parameterized Constructor # 1  --Print Function--  Name is: Husnain Momin  SAP: 38589  Contact No.: 0324-7917046  Date of Birth: 28/10/2002  --Print Function--  Name is: Akhtar Saleem  SAP: 5639  Contact No.: 0300-1234567  Date of Birth: 15/05/1995 |

**// Comment print() function before going ahead.**

**5. Write a code to run the destructor in .cpp file for both objects created ‘s1’ and ‘s2’. Run the code and write output here.**

|  |
| --- |
| **Write Output Here:**  Default Constructor  Parameterized Constructor # 1  Destructor  Destructor |

**// Comment all previous code in main() function before going ahead.**

**6. Create a non-pointer-based object ‘s3’ with default constructor. Run code and write output below.**

|  |
| --- |
| **Write Output Here:**  Default Constructor  Destructor |

**7. Create a non-pointer-based object ‘s4’ with these values. Run code and write output below.**

**Name = Sultan Mahmood**

**SAP = 2294**

**Phone = 0312-7654321**

**DOB = 07/09/1994**

|  |
| --- |
| **Write Output Here:**  Default Constructor  Parameterized Constructor # 2  Destructor  Destructor |

**8. Explain the behavior of destructors that how destructors are calling?**

|  |
| --- |
| **Write Output Here:**  When we use pointer based objects, we have to use the keyword “delete” followed by the object’s name to manually call the destructor which then destroys the object’s values.  When we use non-pointer based objects, destructor runs by default or automatically without calling it. |

**Code:**

#include<iostream>

using namespace std;

class Student

{

private:

string name;

int sap;

string phone;

string dob;

public:

Student()

{

name="Husnain Momin";

sap=38589;

phone="0324-7917046";

dob="28/10/2002";

cout<<"Default Constructor "<<endl;

}

Student(string n, int s, string p, string d)

{

name=n;

sap=s;

phone=p;

dob=d;

cout<<"Parameterized Constructor # 1"<<endl;

}

Student(string n, string p, string d, int s)

{

name=n;

phone=p;

dob=d;

sap=s;

cout<<"Parameterized Constructor # 2"<<endl;

}

~Student()

{

cout<<"Destructor"<<endl;

}

//print function

void print()

{

cout<<"--Print Function--"<<endl<<endl;

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

cout<<"SAP: "<<sap<<endl;

cout<<"Contact No.: "<<phone<<endl;

cout<<"Date of Birth: "<<dob<<endl;

}

};

int main ()

{

//default

Student\* s1 = new Student();

//para 1

Student\* s2 = new Student("Akhtar Saleem",5639,"0300-1234567","15/05/1995");

//s1->print();

//s2->print();

delete s1;

delete s2;

Student s3;

Student s4("Sultan Mehmood","0312-7654321","7/09/1994",2294);

}