

**Assignment No: 01**

Submitted by:

Name : Haseeb Ullah

ID: F20232661009

Section: V21

Submitted to:

Name: Sir M Owais Khan

PF Theory : 5 Questions

**Address:** C-II Block C 2 Phase 1 Johar Town, Lahore, Punjab 54770.

University of Management & Technology.

**Problem 1:**

Develop a program that takes values of the length and breadth of a rectangle from a user and checks if it is square or not.

**Ans: PURPOSE OF PROGRAM:**

                            the program is to calculate the area of rectangle, check weather its square or not.

**INPUT:**

        users will input the lenght and bredth.

**PROCESS:**

        calculate the area by multiplying lenght and width.

        if its is square or not.

**OUTPUT:**

        the total area is Area

        its square and not.

**C++ Program:**

|  |
| --- |
| #include <iostream>  #include <string>  using namespace std;  int main (){      double lenght, width, area, square;      cout << "Enter the lenght ";      cin >> lenght;      cout << "Enter the width ";      cin >> width;          area = lenght \* width;      if(width == lenght){          cout << "Total year is: " << area << endl ;          cout << "its a square.";      }      else{          cout << "Total year is: " << area << endl ;          cout << "Its not the square";      }      return 0;  } |

**DRY RUN:**

Enter the lenght 33

Enter the width 43

Total year is: 1419

Its not the square

OR

Enter the lenght 55

Enter the width 55

Total year is: 3025

its a square.

**Problem 2:**

An organization decided to give a bonus of 5% to the employee if his/her year of service is more than 5 years. Ask an employee for their salary and year of service and print the net bonus amount and calculate incremented salary.

**Ans: PURPOSE OF PROGRAM:**

                        if employee year of service is more than 5 years than applied 5% bonus on his/her salary.

**INPUT:**

    users have to put salary

    and years of service.

**PROCESS:**

        bonus is equal to 0.05 multiply with salary

        and then bonus will be add in the salary and equal to net salary.

**OUTPUT**:

        your net salary is net salary or your salary is without bonus.

**C++ Program:**

|  |
| --- |
| #include <iostream>  #include <string>  using namespace std;  int main (){      double salary, serviceyears;      double netsalary = 0, bonus = 0;      cout << "Enter your salary ";      cin >> salary;      cout << "Enter your service years ";      cin >> serviceyears;      if(serviceyears > 5){          bonus = 0.05 \* salary;          netsalary = salary + bonus;          cout << "Your net-salary is: " << netsalary << endl;      }      else{          cout << "Your salary is: " << salary << “ with 25% bonus.” ;      }      return 0;  } |

**DRY RUN:**

Enter your salary 500000

Enter your service years 7

Your net-salary is: 525000 with 25% bonus.

**Problem 3:**

A university has the following rules for the grading system:

* Below 25 – F
* 25 to 45 – E
* 45 to 50 – D
* 50 to 60 – C
* 60 to 80 – B
* Above 80 – A

Ask the user to enter marks and print the corresponding grade.

**Ans:** **PURPOSE OF PROGRAM:**

The program allocates a grade to a university student.

Suppose the total marks are 100. If the student scores above 80, the program assigns an 'A' grade, and sequentially 'B', 'C' for scores

above 25, 'D' for scores below 25, and 'F' for lower scores.

**INPUT**:

Student's obtained marks

**PROCESS**:

Calculate the percentage by dividing obtained marks by total marks and multiplying by 100 to convert it to a percentage.

•   Above 80 – A

•   60 to 80 – B

•   50 to 60 – C

•   45 to 50 – D

•   25 to 45 – E

•   Below 25 – F

**OUTPUT:**

   - Display the grade according to the above percentage of the obtain marks.

**C++ Program:**

|  |
| --- |
| #include <iostream>  using namespace std;  int main() {      int total\_marks = 100;      double obtain\_marks, percentage;      char grade;      cout << "Enter Obtained marks :";      cin >> obtain\_marks;      if(obtain\_marks >= 0 && obtain\_marks <= total\_marks){          percentage = (obtain\_marks / total\_marks) \* 100;          if (obtain\_marks > 80) {              grade = 'A';          } else if (obtain\_marks > 60 && obtain\_marks <= 80) {              grade = 'B';          } else if (obtain\_marks > 50 && obtain\_marks <= 60) {              grade = 'C';          } else if (obtain\_marks > 45 && obtain\_marks <= 50) {              grade = 'D';          } else if (obtain\_marks > 25 && obtain\_marks <= 45) {              grade = 'E';          } else {              grade = 'F';          }      }      else{          cout << "Enter valid marks !\n";      }      cout << "Your percentage is : " << percentage << "%\n"; // also I can put endl.      cout << "Grade " << grade;      return 0;  } |

**DRY RUN:**

Enter obtained marks: 78

Your percentage is: 78%

Grade A

**Problem 4:**

A student will not be allowed to sit in an exam if his/her attendance is less than 75%. Take the following input from the user:

* Number of classes held
* Number of classes attended.
* And print the following:
* percentage of classes attended
* and decide: Is the student is allowed to sit in the exam or not.

**Ans:**

**PURPOSE OF THE PROGRAM:**

The program will not allow a student to sit in the exam if their attendance is less than 75 percent.

**INPUT:**

        Number of classes held.

        Number of classes attended.

**PROCESS:**

        Calculate the percentage of classes attended. using if else statement

        Determine whether the student is allowed to sit in the exam or not, using a ternary operation.

**OUTPUT:**

        Percentage of classes attended.

        Indication of whether the student is allowed to sit in the exam or not.

**C++ Program:**

|  |
| --- |
| #include <iostream>  #include <string>  using namespace std;  int main (){      double attendclasses, totalclasses, percentage;      string allowtosit;      cout << "Enter number of classes attended: ";      cin >> attendclasses;      cout << "Enter number of classes held: ";      cin >> totalclasses;      if (totalclasses > 0 && attendclasses <= totalclasses){          percentage = (attendclasses / totalclasses) \* 100;        }      else{          cout << "Enter valid for number of classes." << endl;      }      allowtosit = (percentage > 75 && percentage <= 100) ? "You are allowed to sit in exam." : "You are not allowed to sit in exam";        cout << "Total percentage of attended classes is: " << percentage << "%" << endl;      cout << allowtosit << endl;      return 0;  } |

**DRY RUN:**

Enter number of classes attended: 77

Enter number of classes held: 100

Total percentage of attend classes is: 77%

You are allowed to sit in exam

**Problem 5:**

Develop a program that modifies the above question (**Problem 4**) to allow the student to sit if he/she has a medical cause. Ask the user if he/she has a medical cause or not ('Y' or 'N') and print accordingly.

**Ans: PURPOSE OF THE PROGRAM:**

the user will input whether they have a medical issue or not.

**INPUT:**

        Number of classes held.

        Number of classes attended.

Enter medical issue yes or not

**PROCESS:**

        Calculate the percentage of classes attended. Using if else statement

        Determine whether the student is allowed to sit in the exam or not, using a ternary operation.

**OUTPUT:**

        Percentage of classes attended.

        Indication of whether the student is allowed to sit in the exam or not.

I don’t know why the code is running after spending 2 hours on it to correct it.

**C++ Program:**

|  |
| --- |
| #include <iostream>  #include <string>  using namespace std;  int main (){      double attendedclasses, totalclasses, percentage;      string allowtosit;      string medicalissue;      char character;      cout << "Enter number of classes attended: ";      cin >> attendedclasses;      cout << "Enter number of classes held: ";      cin >> totalclasses;      cout << "Enter medical issue yes (Y or y), if no (N or n): ";      cin >> character;      if (totalclasses > 0 && attendedclasses <= totalclasses){          percentage = (attendedclasses / totalclasses) \* 100;          cout << "Total percentage of attended classes is: " << percentage << "%" << endl;          if(percentage > 75 && percentage <= 100 ){              cout << "You are allowed to sit.\n";              medicalissue = ((character == 'Y' || character == 'y') ? "yes you can sit with medical issue" : "you can sit with medical issue.";              cout << medicalissue;          }          else {              cout << "You are not allowed to sit";          }      }      else{          cout << "Enter valid number of classes." << endl;      }      return 0;  } |

**DRY RUN;**

Enter number of classes attended: 13

Enter number classes held: 15

Enter issue if yes (Y or y), or No (N or n): y

Total percentage of attended classes is: 86.6667%.

You are allowed to sit in exam.

Yes, you can sit with medical issue