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ATHARVA COLLEGE OF ENGINEERING
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Department of Information Technology

Academic Year: 2023-24

Lab Work: Computer programming Paradigms Lab(CPPL) ITL303

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Batch: I3
Rollno.: 51

Date of Performance : 23/07/2024

Experiment 01b :

WAP to display student Name, Roll No, Marks(at least 3 Subjects),Total marks of student and percentage(Use structure).
Show the grades (Distinction, First class , Second class and Pass)on the basis of Percentage(Hint-use nested if else)

Theory:

Steps to implement the program:

1. Define the Structure:
    a. Create a structure student_record that contains:
        - student_name (a string to store the student's name)
        - roll_no (an integer to store the roll number)
        - marks (an array of integers to store the marks of at least 3 subjects)
2. Aggregate Marks Function:
    a. Write a function to calculate the total marks obtained by the student. This function takes the marks array as input and returns the sum.
3. Calculate Percentage:
    a. Calculate the percentage based on the total marks and the number of subjects.
4. Determine Grades:
    •Use nested if-else statements to determine the grade based on the percentage:
        - Distinction: Percentage >= 75%
        - First Class: 60% <= Percentage < 75%
        - Second Class: 50% <= Percentage < 60%
        - Pass: Percentage < 50%

5. Display the Results:
    - Print the student's name, roll number, marks, total marks, percentage, and grade.

Program Code:

```
#include<stdio.h>

struct student_record{
  char student_name[50];
  int roll_no;
  int marks[5];
};

int aggregate_marks(int marks[]){
  int i = 0;
  int sum = 0;
  while(i < 5){
     sum += marks[i];
     i++;
  }
  return sum;
}

void passGrade(int per){
  printf(" Your grade is ");
  if(per>=35){
     if(per>=55){
        if(per>=75){
           if(per>=90){
              printf("Distinction\n");
           } else{
              printf("First Class.\n");
           }
        } else {
           printf("Second Class.\n\n\n");
        }
     } else {
        printf("Pass.\n");
     }
  } else {
     printf("Fail.\n");
  }
  printf("\n\n\nGreater than or equal to 90 is DISTINCTION.\n");
  printf("Greater than or equal to 75 is FIRST CLASS.\n");
```

```
  printf("Greater than or equal to 55 is SECOND CLASS.\n");
  printf("Greater than or equal to 35 is PASS.\n");
}

int main(){
  int number_of_students;
  printf("\n\nEnter the number of students : ");
  scanf("%d", &number_of_students);
  struct student_record students[number_of_students];
  int sum[number_of_students];
  float percentages[number_of_students];

  int i = 0;
  for(;i<number_of_students;i++){
    printf("Enter details for student no.%d.\n ", i+1);
    printf("Name : ");
    scanf("%s", &(students[i].student_name[0]));
    printf("Roll No. : ");
    scanf("%d", &students[i].roll_no);
    printf("Enter marks for \n");
    int j = 0;
    while(j<5){
      printf("Subject %d : ", j+1);
      scanf("%d", &students[i].marks[j]);
      j++;
    }
  sum[i] = aggregate_marks(students[i].marks);
  percentages[i] = sum[i]/5;
  i++;
  }
  i = 0;
  for(;i<number_of_students;i++){
    printf("\n\nName : %s\n", students[i].student_name);
    printf("Roll No.: %d\n", students[i].roll_no);
    printf("Marks For Subject 1 : %d\n", students[i].marks[0]);
    printf("Marks For Subject 2 : %d\n", students[i].marks[1]);
    printf("Marks For Subject 3 : %d\n", students[i].marks[2]);
    printf("Marks For Subject 4 : %d\n", students[i].marks[3]);
    printf("Marks For Subject 5 : %d\n", students[i].marks[4]);
    printf("Total : %d\n", sum[i]);
    printf("Percentage : %.2f\n\n", percentages[i]);
    passGrade(percentages[i]);
    i++;

  }
```

```
  return 0;
}
```

Output:

```
Enter the number of students : 1
Enter details for student no.1.
 Name : rahul
Roll No. : 51
Enter marks for
Subject 1 : 30
Subject 2 : 20
Subject 3 : 50
Subject 4 : 80
Subject 5 : 40


Name : rahul
Roll No.: 51
Marks For Subject 1 : 30
Marks For Subject 2 : 20
Marks For Subject 3 : 50
Marks For Subject 4 : 80
Marks For Subject 5 : 40
Total : 220
Percentage : 44.00

 Your grade is Pass.



Greater than or equal to 90 is DISTINCTION.
Greater than or equal to 75 is FIRST CLASS.
Greater than or equal to 55 is SECOND CLASS.
Greater than or equal to 35 is PASS.
```

Conclusion: Learned how to use structures, functions, and control statements in

C programming to solve real-world problems in an educational context.

Marks Obtained:

Lab Outcome : LO1