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Program to Assign grades to a student using Nested If Else

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Given an integer array **marks**, which comprises of marks scored by a student (out of 100) in different subjects, the task is to assign a grade to the student. The grade is found out by taking the percentage of the marks scored by the student. The percentage is calculated as:

$$\frac{\text{Total marks scored by the student}}{\text{Maximum marks of all subjects}}$$

The grade is assigned using the following rules:

Percentage	Grade
90 and above	A
80 to 89	B
60 to 79	C
33 – 59	D
below 33	F

Examples:

Input: *marks = { 25, 65, 46, 98, 78, 65 }*
Output: *C*

Input: *marks = { 95, 88, 98, 93, 92, 96 }*
Output: *A*

Approach:

- Initialize a variable to sum all the marks scored by the student, **total** to 0.
- Initialize a variable to store the grade of the student, **grade** to 'F'.
- First, we iterate through the **marks** array and find the total marks scored by the student.
- Then, we apply the formula described above to calculate the percentage.
- We then make a nested if else construct to assign proper grade to the student.

For more on decision making and different types of decision making constructs, refer Decision Making in Java.

Below is the implementation of the above approach:

```cpp
// CPP program to assign grades to a student
// using nested if-else
#include<bits/stdc++.h>
using namespace std;

int main()
{

    // Store marks of all the subjects in an array
    int marks[] = { 25, 65, 46, 98, 78, 65 };

    // Max marks will be 100 * number of subjects
    int len = sizeof(marks) / sizeof(marks[0]);
    int max_marks = len * 100;

    // Initialize student's total marks to 0
    int total = 0;

    // Initialize student's grade marks to F
    char grade = 'F';

    // Traverse though the marks array to find the sum.
    for (int i = 0; i < len; i++)
    {
        total += marks[i];
    }

    // Calculate the percentage.
    // Since all the marks are integer,
    // typecast the calculation to double.
    double percentage = ((double)(total) / max_marks) * 100;

    // Nested if else
    if (percentage >= 90)
    {
        grade = 'A';
    }
    else
    {
        if (percentage >= 80 && percentage <= 89)
        {
            grade = 'B';
        }
        else
        {
            if (percentage >= 60 && percentage <= 79)
            {
```

```
                        grade = 'C';
                }
                else
                {
                    if (percentage >= 33 && percentage <= 59)
                    {
                        grade = 'D';
                    }
                    else
                    {
                        grade = 'F';
                    }
                }
            }
        }
    cout << (grade) << endl;;
}

// This code is contributed by
// Surendra_Gangwar
```

Java

```java
// Java program to assign grades to a student
// using nested if-else

class GFG {
    public static void main(String args[])
    {

        // Store marks of all the subjects in an array
        int marks[] = { 25, 65, 46, 98, 78, 65 };

        // Max marks will be 100 * number of subjects
        int max_marks = marks.length * 100;

        // Initialize student's total marks to 0
        int total = 0;

        // Initialize student's grade marks to F
        char grade = 'F';

        // Traverse though the marks array to find the sum.
        for (int i = 0; i < marks.length; i++) {
            total += marks[i];
        }

        // Calculate the percentage.
        // Since all the marks are integer,
```

```java
        // typecast the calculation to double.
        double percentage
            = ((double)(total) / max_marks) * 100;

        // Nested if else
        if (percentage >= 90) {
            grade = 'A';
        }
        else {
            if (percentage >= 80 && percentage <= 89) {
                grade = 'B';
            }
            else {
                if (percentage >= 60 && percentage <= 79) {
                    grade = 'C';
                }
                else {
                    if (percentage >= 33 && percentage <= 59) {
                        grade = 'D';
                    }
                    else {
                        grade = 'F';
                    }
                }
            }
        }

        System.out.println(grade);
    }
}
```

Python3

```python
# Python3 program to assign grades
# to a student using nested if-else

if __name__ == "__main__":

    # Store marks of all the subjects
    # in an array
    marks = [25, 65, 46, 98, 78, 65 ]

    # Max marks will be 100 * number
    # of subjects
    max_marks = len(marks)* 100

    # Initialize student's total
    # marks to 0
    total = 0
```

```python
    # Initialize student's grade
    # marks to F
    grade = 'F'

    # Traverse though the marks array
    # to find the sum.
    for i in range(len(marks)):
        total += marks[i]

    # Calculate the percentage.
    # Since all the marks are integer,
    percentage = ((total) /max_marks) * 100

    # Nested if else
    if (percentage >= 90):
        grade = 'A'

    else :
        if (percentage >= 80 and
            percentage <= 89) :
            grade = 'B'

        else :
            if (percentage >= 60 and
                percentage <= 79) :
                grade = 'C'

            else :
                if (percentage >= 33 and
                    percentage <= 59) :
                    grade = 'D'

                else:
                    grade = 'F'

    print(grade)

# This code is contributed by ita_c
```

C#

```csharp
// C# program to assign grades to a student
// using nested if-else
using System;

class GFG
{
public static void Main()
```

```csharp
{
    // Store marks of all the subjects
    // in an array
    int []marks = { 25, 65, 46, 98, 78, 65 };

    // Max marks will be 100 * number
    // of subjects
    int max_marks = marks.Length * 100;

    // Initialize student's total marks to 0
    int total = 0;

    // Initialize student's grade marks to F
    char grade = 'F';

    // Traverse though the marks array to
    // find the sum.
    for (int i = 0; i < marks.Length; i++)
    {
        total += marks[i];
    }

    // Calculate the percentage.
    // Since all the marks are integer,
    // typecast the calculation to double.
    double percentage = ((double)(total) /
                            max_marks) * 100;

    // Nested if else
    if (percentage >= 90)
    {
        grade = 'A';
    }
    else
    {
        if (percentage >= 80 && percentage <= 89)
        {
            grade = 'B';
        }
        else
        {
            if (percentage >= 60 && percentage <= 79)
            {
                grade = 'C';
            }
            else
            {
                if (percentage >= 33 && percentage <= 59)
                {
                    grade = 'D';
```

```
            }
            else
            {
                grade = 'F';
            }
        }
    }
}

    Console.WriteLine(grade);
}
}

// This code is contributed by Ryuga
```

PHP

```php
<?php
// PHP program to assign grades to a student
// using nested if-else

// Store marks of all the subjects in an array
$marks = array(25, 65, 46, 98, 78, 65);

// Max marks will be 100 * number of subjects
$max_marks = sizeof($marks) * 100;

// Initialize student's total marks to 0
$total = 0;

// Initialize student's grade marks to F
$grade = 'F';

// Traverse though the marks array to find the sum.
for ($i = 0; $i < sizeof($marks); $i++)
{
    $total += $marks[$i];
}

// Calculate the percentage.
// Since all the marks are integer,
// typecast the calculation to double.
$percentage = (($total) / $max_marks) * 100;

// Nested if else
if ($percentage >= 90)
{
    $grade = 'A';
}
```

```php
else
{
    if ($percentage >= 80 && $percentage <= 89)
    {
        $grade = 'B';
    }
    else
    {
        if ($percentage >= 60 && $percentage <= 79)
        {
            $grade = 'C';
        }
        else
        {
            if ($percentage >= 33 && $percentage <= 59)
            {
                $grade = 'D';
            }
            else
            {
                $grade = 'F';
            }
        }
    }
}

echo $grade . "\n";

// This code is contributed by Akanksha Rai
?>
```

Output:

```
C
```

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