

Marks: 10

Online (C2)

Duration: 30 mins

Write a function named “calculate\_ratio” that takes an array of double numbers, the size of the array, and an array of callback function pointers as arguments. The “calculate\_ratio” function calculates and returns the ratio of the average of all the square elements and the cube elements in the array. You can **only** call the “average” function inside the “calculate\_ratio” function. You must use the array of callback function pointers inside the “calculate\_ratio” function.

```
#include <stdio.h>
#include <stdlib.h>

// Don't change this function
double square(double x) {
    return x * x;
}

// Don't change this function
double cube(double x) {
    return x * x * x;
}

// Don't change this prototype
double * take_input(int count);

// Don't change this function
double average(double *numbers, int count, double (*fn) (double)) {
    double sum = 0;
    for (int i = 0; i < count; i++) {
        sum += fn(numbers[i]);
    }
    return sum / count;
}

// Here, implement the function named "calculate_ratio" that will work as
// mentioned earlier.

// Don't change this function
int main() {
    int count;
    scanf("%d", &count);
    double * numbers = take_input(count);
```

```
    double (*callback_funcs[])(double) = {square, cube};

    printf("Ratio of average of squares and average of cubes: %.2lf\n",
calculate_ratio(numbers, count, callback_funcs));

    free(numbers);
    return 0;
}

// Don't change this function
double * take_input(int count) {
    double *numbers = (double *) calloc(count, sizeof(double));
    double *initial = numbers;
    while(count--){
        scanf("%lf", numbers);
        numbers++;
    }
    return initial;
}
```