

**NATIONAL UNIVERSITY OF SCIENES & TECHNOLOGY**

**Fundamentals of Programming (CS114)**

**Assignment # 2**

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**Class:** BEE-12-C

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Submission: Email your assignment as a single word file to Miss Ain Zia at [azia.msee18seecs@seecs.edu.pk](mailto:azia.msee18seecs@seecs.edu.pk). You must include your name, registration number and section at the top of your assignment.

**Question 1:**

Given the equation , which of the following, if any, are correct C statements for this equation?

1. **; ✔**

Yes, this statement is equivalent and will have the same result as the given equation because multiplication has a higher precedence than addition and will be evaluated from left-to-right.

1. **; ✖**

The addition of parantheses causes 7 to be added into the rightmost x first and then, multiplication takes place in a left associative manner. Thus, it is not a correct statement.

1. **; ✖**

Again, the addition of the parantheses on the right causes the answer to be different, however, the leftmost parantheses has no effect here.

1. ***;✔***

Yes, this statement has the same effect as the given equation because the order of execution remains the same. Such parantheses are called redundant parantheses and are added to increase visibility of an equation.

1. ***; ✔***

Again, redundant parantheses were used which, although, cause the three x’s to be multiplied first, but they do not have an impact on the result.

1. ***; ✖***

No, this statement is not a correct alternative for the aforementioned equation because the parantheses in it cause two x’s to be multiplied first and then 7 is added to them which alter the result.

**Question 2:**

State the order of evaluation of the operators in each of the following C statements and show the value of after each statement is performed.

/\* division and multiplication take precedence \*/

**i. ;**

**Order:**

**Result:** The value of x after evaluation will be 15.

**ii.**

/\* modulo, division and multiplication have equal precedence \*/

**Order:**

**Result:** The value of x after evaluation will be 3.

**iii.**

**Order:**

**Result:** The value of x after evaluation is 324.

**Question 3:**

Write a program that asks the user to enter two numbers, obtains them from  
the user and prints their sum, product, difference, quotient, and remainder.

#include <stdio.h>

int main(void){

int a, b, sum, product, difference, quotient, modulo; // declaring variables

printf("Enter the first number: ");

scanf("%d", &a); // taking input from user

printf("Enter the second number: ");

scanf("%d", &b);

sum = a + b;

product = a \* b;

difference = a - b; // assigning an arithmetic result to a variable

quotient = a / b;

modulo = a % b;

printf("\nThe sum is: %d", sum);

printf("\nThe product is: %d", product);

printf("\nThe difference is: %d", difference); // printing the results

printf("\nThe quotient is: %d", quotient);

printf("\nThe remainder is: %d", modulo);

return 0;

}

**Question 4:**

Write a program that reads an integer and determines and prints whether  
it is odd or even. [*Hint:* Use the remainder operator. An even number is a multiple of two. Any multiple of two leaves a remainder of zero when divided by 2.]

#include <stdio.h>

int main(void)

{

int a; // declaring a variable

printf("Please enter your number: ");

scanf("%d", &a); // taking input from the user and storing it in a

if(a%2 == 0) {

/\* an if condition that prints the following statement if remainder of input number when divided by 2 gives us 0 \*/

printf("\nThe entered number is even.");

}

else {

/\* if the remainder is not 0, it gives us this statement in lieu of the aforementioned statement \*/

printf("\nThe entered number is odd.");

}

return 0;

}

**Question 5:**

Write a program that calculates the squares and cubes of the numbers from 0 to 10 and uses tabs to print the following table of values:

|  |  |  |
| --- | --- | --- |
| Number | Square | Cube |
| 1 | 1 | 1 |
| 2 | 4 | 8 |
| 3 | 9 | 27 |
| 4 | 16 | 64 |
| 5 | 25 | 125 |
| 6 | 36 | 216 |
| 7 | 49 | 343 |
| 8 | 64 | 512 |
| 9 | 81 | 729 |
| 10 | 100 | 1000 |

#include <stdio.h>

int main(void)

{

int a, square, cube; // declaring variables

printf("Number\t\tSquare\t\tCube\n"); // printing headers

for(a=0; a<=10; a++){

/\* for loop, while condition is satisfied, it executes the statements inside it and increments variable a by one \*/

square = a\*a;

cube = a\*a\*a;

printf("%d\t\t\t%d\t\t\t%d\n", a, square, cube);

}

return 0;

}