

**NATIONAL UNIVERSITY OF SCIENES & TECHNOLOGY**

**Fundamentals of Programming (CS114)**

**Assignment # 1**

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**Class:** BEE-12-C

**Semester:** 1st

**Dated:** 10/10/2020

**Deadline: 15th November 2020, 11:59 PM**

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:**

Arrange the following lines of code to display the addition of two integers:

printf ( “ Enter second integer : ”);

int main (void)

printf (“Sum is %d \n”, sum) ;

{

printf ( “ Enter first integer : ”);

#include < stdio.h >

scanf ( “%d”, &integer1 );

return 0;

scanf ( “%d”, &integer2 );

sum = integer1 + integer2;

}

int integer1, integer2, sum;

**Solution:**

#include <stdio.h>

int main(void)

{

int integer1, integer2, sum;

printf (“Enter first integer: ”);

scanf (“%d”, &integer1);

printf (“Enter second integer: ”);

scanf (“%d”, &integer2);

sum = integer1 + integer2;

printf (“Sum is %d \n”, sum);

return 0;

}

* **Question 2:**

For each of the following statements, explain why it is not correct, and fix it

1. **#Include <stdio.h>;**

1. Lines beginning with # in a program are preprocessor directives and are usually on a single line, so, adding a “;” after these statements is often redundant and syntactically incorrect.

2. The I of “Include” must not be capital and will lead to an error because of C language being case sensitive.

**Corrected:** #include <stdio.h>

1. **#define PI = 3.14159**

#define being a declaring directive, it has a definitive syntax. The equal sign is not to be placed there as it will lead to an error and PI will not be assigned any value.

**Corrected:** #define PI 3.14159

1. **printf ("The product of %d and %d is %d"\n, x, y);**

1. The escape sequence “\n” should be placed within the quotation marks in order to shift it to the new line.

2. There are three format specifiers that begin with “%” but only two variables, therefore, it will give us an irregular value.

**Corrected:** printf("The product of %d and %d is %d\n", x, y, x\*y);

1. **int 9value;**

Variable names in C cannot begin with numbers.

**Corrected:** int value9;

1. **float enum=5.89;**

Since enum is a datatype in C, the compiler gives us an error. You cannot have variable names based on in-built definitions. We take advantage of the fact that C is case sensitive and correct it as such;

**Corrected:** float ENUM=5.89;

* **Question 3:**

Write a single C statement to accomplish each of the following:

1. **Prompt the user to enter an integer. End your prompting message with a colon (:) followed by a space and leave the cursor positioned after the space.**

printf(“Enter an integer: “);

1. **Read an integer from the keyboard and store the value entered in integer variable a.**

scanf(“%d”, &a)**;**

1. **Print the message "This is a C program." on one line.**

printf(“This is a C program.”);

1. **Print the message "This is a C program." on two lines so that the first line ends with C.**

printf(“This is a C\n program.”)

1. **Print the message "This is a C program." with each word on a separate line.**

printf(“This\n is\n a\n C\n program.”)

* **Question 4:**

Write a program that calculates the product of three integers. Use scanf to read the values of integers. Add comments in your program. (To get full marks your code should be legible, not only just correct)

// program to print the product of three user-input integers

#include <stdio.h>

int main(){

int x, y, z, product; // declaring variables

printf("Enter the first integer:\n"); // prompts the user to enter an integer

scanf("%d", &x); // stores the value entered by user into x

printf("Enter the second integer:\n");

scanf("%d", &y);

printf("Enter the third integer:\n");

scanf("%d", &z);

product = x \* y \* z; // multiplies the three integers and stores it into product

printf("\nThe product of three integers is: %d", product); // prints the result

return 0;

}

* **Question 5:**

Write a program that reads in the radius of a circle and prints the circle’s diameter, circumference and area. Use the constant value 3.14159 for π. Perform each of these calculations inside the printf statement(s). Add comments in your program. (To get full marks your code should be legible, not only just correct)

// program to calculate and print diameter, circumference and area

#include <stdio.h>

#define PI 3.14159 // defining PI as a constant

int main() {

float r; // declaring a floating point variable r

printf("Enter the circle's radius:\n"); // prompting user to enter radius

scanf("%f", &r); // storing the user’s input in r

// printing the desired value with calculations done inside printf statement

printf("Area =%f\n", PI \* r \* r);

printf("Circumference =%f\n", 2 \* PI \* r);

printf("Diameter =%f\n", 2 \* r);

return 0;

}