

Homework #2 – Solution

(C Programming for Beginners - OnLine)

2.1 Here is a listing of a program, which demonstrates calculating area of a circle whose radius is 2.

```
int radius = 2;
double area;
const double pi = 3.142;

area = pi * radius * radius;

printf("The area is: ");
printf("%7.2f\n", area);
```

Modify the above program and use only one print statement instead of two printf() statements to show the same output ("The area is: xxxx.xx").

Solution:

```
printf("The area is: %7.2f\n", area);
```

2.2 Following code uses scanf() to get the radius from user during run time, calculates area and displays it.

```
//extra line feed
printf("\n");
printf("Enter the radius: ");
scanf("%d", &radius);

area= pi * radius * radius;

printf("The area is: ");
printf("%7.2f\n", area);
```

Modify the above program instead of hard-coding the value of PI in the program, get the value of PI from the user as well, similar to how you got the value of the radius above

Solution:

```
//extra line feed
printf("\n");
printf("Enter the value of pi: ");
//this code does not check error if user enters a garbage
double newPi; //pi is final, can't change, so redefine
//Note that, in some compiler you have to declare variable
//at the top of the function before any code

scanf("%lf", &newPi);
```

```
area= newPi * radius * radius;
```

```
printf("The area is: ");  
printf("%7.2f\n", area);
```

2.3 Following code demonstrate that radius could be a short type. It also displays how to get a character input and string input from user, and clean the input buffer

```
//extra line feed  
printf("\n");  
printf("Enter the radius: ");  
short newRadius;  
  
scanf("%hd", &newRadius);  
  
area= pi * newRadius * newRadius;  
  
printf("The area is: ");  
printf("%7.2f\n", area);  
  
//extra line feed  
printf("\n");  
  
char lastName[20];  
char yourInitial;  
  
//extra line feed  
printf("\n");  
printf("Please enter your last name: ");  
scanf("%19s", lastName); //19 is stop user from typing long name  
  
//scanf leaves new line character inserted by enter key  
//You nee clean the input buffer by repeatedly calling getchar()  
//until you get the new line character. You will learn following  
//when you read about lops  
  
while (getchar() != '\n')  
    continue;  
  
printf("What is your first name?: ");  
yourInitial = getchar(); //user may enter more than one char  
//but, getchar() returns only one char and leaves rest of the  
//characters including enter (new line '\n') character  
//in the input buffer, which may effect your next scanf.  
  
while (getchar() != '\n')  
    continue;  
  
printf("Hello Mr. %c. %s\n", yourInitial, lastName);
```

Following code demonstrate use of printf(), and format specifiers

```
//extra line feed
printf("\n");
printf("5185 is fun course.\n\n");

printf("First Name \tLast Name\tCity\n");
printf("----- \t-----\t----\n");
printf("Bill \tClinton \tHarlem\n");

printf("\n");

//extra line feed
printf("\n");
printf("How do you print double quotes?\n");
printf("Who said\"Test Scores Can Be Used ....\"");
```

Modify the above demo code so that you are not hard coding the name, and city (Bill Clinton, Harlem etc) but, get the values from user.

- Add a column for zip code as well
- Declare four variables (decide on data type):
First Name, Last Name, City, and Zip
- Ask user for the values for these variables and display them instead of using the hardcoded names like Bill Clinton Harlem

A sample run may look like this:

5185 is fun course.

First Name	Last Name	City
-----	-----	----
Bill	Clinton	Harlem

How do you print double quotes?
Who said"Test Scores Can Be Used"

Please enter your first name: Bineet
Please enter your last name: Sharma
Please enter your city: Pleasanton
Please enter your zip code: 94566

First Name	Last Name	City	Zip Code
-----	-----	----	-----
Bineet	Sharma	Pleasanton	94566

Solution:

```
char FirstName[20];
char newLastName[20];
char city[20];
int zipCode;

//extra line feed
printf("\n");
printf("Please enter your first name: ");
scanf("%19s", FirstName);
printf("Please enter your last name: ");
scanf("%19s", newLastName);
printf("Please enter your city: ");
scanf("%19s", city);
printf("Please enter your zip code: ");
scanf("%d", &zipCode);

//extra line feed
printf("\n");
printf("First Name \tLast Name\tCity\t\tZip Code\n");
printf("----- \t-----\t----\t\t-----\n");
//this will not properly align the text as it
//could be different length

/*System.out.printf(firstName + "\t" + lastName +
                    "\t" + city + "\t" + zipCode);
System.out.printf("\n\n");
*/

//the names may not line properly, you need to
//do extra work to do the formatting
printf("%-16s%-12s%-10s%7d", FirstName, newLastName,
                    city, zipCode);

printf("\n\n");
```

2.4 Print a menu of choices, and ask the user to make a selection and print what selection user selected and provide a feedback. An interaction with user looks like this:

```
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit
```

What would you like to do?: 3

You selected Multiplication

Thank you for using my program

Solution:

```
int choice;

printf("\n");
printf("\t1. Addition\n");
printf("\t2. Subtraction\n");
printf("\t3. Multiplication\n");
printf("\t4. Division\n");
printf("\t5. Exit\n");
printf("\n\n");

printf("What would you like to do?: ");

scanf("%d", &choice);

printf("\n");
if (choice == 1)
    printf("\tYou selected Multiplication\n");
else if (choice == 2)
    printf("\tYou selected Subtraction\n");
else if (choice == 3)
    printf("\tYou selected Multiplication\n");
else if (choice == 4)
    printf("\tYou selected Division\n");
else if (choice == 5)
    printf("\tYou selected Exit\n");
else
    printf("\tSorry only 1 to 5 is allowed\n");

printf("\nThank you for using my program\n");
```