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Q1. What is the purpose of the main() function in a C program? Explain its significance.

In a C program, execution of the program starts with the main() function. It indicates the computer in which it begins to execute the code instructions. The main() is the function that regulates the flow of the general program and in most cases the main also returns a value which in most cases shows whether the program has successfully run or encountered an error. The main() function is another most significant element in any C program because the program itself cannot run without it.

Q2. Explain the difference between a variable declaration and a variable initialization in C.

When you inform the compiler about the name and type of the variable, but you do not assign it a value, that is called a variable declaration. For example:

```
int x;
```

x in this scenario has been declared to be an integer although it is not yet defined.

A variable initialization refers to the time when you give the variable a starting value on either a declaration or subsequent assignment. For example:

```
int x = 10;
```

In this case, x is declared as well as assigned the value of 10.

Q4. What are the different data types available in C? Provide examples of each data type.

In C, data types stipulate the type of data that a variable is capable of holding. The main data types are:

1. int - A type that is used to store whole numbers.

```
int age = 20;
```

2. float- a data type used to store the decimal numbers (single precision).

```
float price = 99.5;
```

3. double - a larger decimal number (double precision) store.

```
double pi = 3.14159265;
```

4. char– used to store one character.

```
char grade = 'A';
```

5. void - a no value, usually used with functions that do not return any value.

```
void display();
```

Q5. Explain the concept of type conversions in C. Provide examples of implicit and explicit type conversions.

Type conversion in C is transforming the type of data the value represents. This occurs when variables of distinct data types occur in an expression. Conversions are of two kinds:

1. Implicit Type Conversion (Type Casting by Compiler)

This is referred to as type promotion as well. Small data types are automatically transformed by the compiler into large data types to transport data without loss.

Example:

```
int a = 5;
```

```
float b = 2.5;
```

```
float result = a + b; // a (int) is automatically converted into float.
```

Here, a is changed to 5.0 (float) and added.

2. Explicit Type Conversion (Type Casting by Programmer)

This is where the programmer manually converts one data type to another by the use of cast operator (type).

Example:

```
float x = 10.75;
```

```
int y = (int)x;
```

In this, x will be turned into an integer, and in this case, y = 10.

Q7. What is the role of the scanf() function in C? Provide an example of its usage.

C scanf function can be used to read input. It enables the program to read the information on the keyboard and save it up to the variables. The format specifier (such as %d, %f, %c) is what type of data should be read, and the address (using &) of the variable where the value should be stored.

Example:

```
#include <stdio.h>

int main() {

    int age;

    printf("Enter your age: ");

    scanf("%d", &age); // accepts an integer as input.

    printf("Your age is: %d", age);

    return 0;

}
```

Here, scanf("%d", &age); reads an integer input typed in by the user and stores the input in age.