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Assignment 3

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Subject: Programming Fundamental
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MID Term Paper

(Question 1)

Part (a)

```cpp
#include<iostream>
using namespace std;
int main(){
    int I,j;
    for(I=1;I>7;I++)
    cout<<I;
    cout<<"End of Program";
    return 7;
}
```

<u>Error:</u>
   End of Program.

Part (b)

```cpp
#include <iostream>
using namespace std;
int main(){
    int num1=5, num2=10;
    if(num1<num2)
    cout << "num1 is smallest";
    num1=num2;
    else
    cout << "num2 is smallest";
    return 0;
}
```

<u>Error:</u>
   Missing bracets of if statement. And "else" without a previous "if".

Part (c)

```cpp
#include<iostream>
using namespace std;
int main(){
    int a=0, b=1;
    a=b++;
    cout << a << b;
    b=++a;
    cout << a << b;
    return 0;
```

```
}
```

Output:
```
    1222
```

Part (d)

```cpp
#include<iostream>
using namespace std;
int main(){
    cout<<Center values";
    int a,b,res;
    cin>>a;cin>>b;
    a=20;b=-10;
    a+b=res;
    cout<<"res = "<<res;
    return 0;
}
```

Error:
        a+b=res; Invalid Assignment.

(Question 2)

(a) Header files
Files that contain declarations of functions, classes, constants, and macros, which can be included in source files using #include. They allow code reuse and separation of interface from implementation. Example: #include <iostream>.

(b) Source code
The human-readable instructions written in a programming language (like C++), which are compiled into machine code by a compiler. It defines the logic and behavior of a program.

(Question 3)

Convert height from inches to feet and inches.
C++ Code:
```cpp
#include <iostream>
using namespace std;
int main() {
    int inches;
    cout << "Enter height in inches: ";
    cin >> inches;

    int feet = inches / 12;
    int r_inches = inches % 12;
```

```cpp
    cout << "Height: " << feet << " feet " << r_Inches << " inches" << endl;
    return 0;
}
```

(Question 4)

Check if first number is multiple of second.
C++ Code:

```cpp
#include <iostream>
using namespace std;

int main() {
    int num1, num2;
    cout<<"Enter first number: ";
    cin>>num1;
    cout<<"Enter second number: ";
    cin >>num2;

    if (num1 % num2 == 0)
        cout<< num1<< " is a multiple of "<<num2<< endl;
    else
        cout<< num1<<" is NOT a multiple of "<<num2<< endl;

    return 0;
}
```

(Question 5)

Input 10 numbers from user and find sum, max, min.
C++ Code:

```cpp
#include <iostream>
using namespace std;

int main() {
    int arr[10], sum=0, min=9999, max=0;

    for(int i=0; i<=9; i++) {
        cout<<"Enter number "<<i+1<<" : ";
        cin>>arr[i];

        sum+=arr[i];

        if(arr[i]>max) {
            max=arr[i];
        }
        if(arr[i]<min) {
            min=arr[i];
        }
    }
    cout<<"Sum = "<<sum<<endl;
    cout<<"Max = "<<max<<endl;
    cout<<"Min = "<<min;
```

```cpp
        return 0;
}
```

Array Sorting

C++ Code:
```cpp
#include <iostream>
using namespace std;

int main() {
        int num;

        cout<<"Enter number : ";
        cin>>num;

        int arr[num];

        for(int i=0; i<=num-1; i++) {
                cout<<"Enter array "<<i+1<<" : ";
                cin>>arr[i];
        }

        for(int i=0; i<=num-1; i++) {
                for(int j=0; j< num-i-1; j++) {
                        if(arr[j]>arr[j+1]) {
                                int temp = arr[j];
                                arr[j] = arr[j+1];
                                arr[j+1] = temp;
                        }
                }
        }

        for(int i=0; i<=num-1; i++) {
                cout<<arr[i]<<" ";
        }

        return 0;
}
```