

Hands-on Activity 6.1:

Functions

Course Code: CPE007	Program: Computer Engineering
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6. Output

```
1  #include <iostream>
2  using namespace std;
3
4
5  // Function Prototypes
6  void arithmeticOperations();
7  void temperatureConversion();
8  void currencyConversion();
9
10 // Arithmetic operations function prototypes
11 int add(int a, int b);
12 int subtract(int a, int b);
13 int multiply(int a, int b);
14 float divide(int a, int b);
15
16 // Temperature conversions function prototypes
17 float fahrenheitToCelsius(float f);
18 float celsiusToFahrenheit(float c);
19
20 // Currency conversions function prototypes
21 float dollarsToPesos(float d);
22 float pesosToDollars(float p);
23
24
25 // Main Function
26
27 int main() {
28     int choice;
29
30     cout << "=====\n";
31     cout << "    FUNCTION MENU PROGRAM\n";
32     cout << "=====\n";
33     cout << "1. Arithmetic Operations\n";
34     cout << "2. Temperature Conversion\n";
35     cout << "3. Currency Conversion\n";
36     cout << "4. Exit\n";
37     cout << "Enter your choice: ";
38     cin >> choice;
39
40     switch (choice) {
```

OUTPUT:

```
41         case 1:
42             arithmeticOperations();
43             break;
44         case 2:
45             temperatureConversion();
46             break;
47         case 3:
48             currencyConversion();
49             break;
50         case 4:
51             cout << "Exiting program. Goodbye!\n";
52             break;
53         default:
54             cout << "Invalid choice! Please try again.\n";
55     }
56
57     return 0;
58 }
59
60 // =====
61 // Function Definitions
62 // =====
63
64 // ---- Arithmetic Operations ----
65 void arithmeticOperations() {
66     int a, b;
67     cout << "\nEnter two integer values: ";
68     cin >> a >> b;
69
70     cout << "\nResults:";
71     cout << "\nAddition: " << add(a, b);
72     cout << "\nSubtraction: " << subtract(a, b);
73     cout << "\nMultiplication: " << multiply(a, b);
74     if (b != 0)
75         cout << "\nDivision: " << divide(a, b);
```

```

76     else
77         cout << "\nDivision: Undefined (division by zero!)";
78
79     cout << endl;
80 }
81
82 int add(int a, int b) { return a + b; }
83 int subtract(int a, int b) { return a - b; }
84 int multiply(int a, int b) { return a * b; }
85 float divide(int a, int b) { return static_cast<float>(a) / b; }
86
87 // ---- Temperature Conversion ----
88 void temperatureConversion() {
89     int choice;
90     float temp;
91     cout << "\n1. Fahrenheit to Celsius\n2. Celsius to Fahrenheit\n";
92     cout << "Enter your choice: ";
93     cin >> choice;
94
95     if (choice == 1) {
96         cout << "Enter temperature in Fahrenheit: ";
97         cin >> temp;
98         cout << "In Celsius: " << fahrenheitToCelsius(temp) << "°C\n";
99     } else if (choice == 2) {
100         cout << "Enter temperature in Celsius: ";
101         cin >> temp;
102         cout << "In Fahrenheit: " << celsiusToFahrenheit(temp) << "°F\n";
103     } else {
104         cout << "Invalid choice.\n";
105     }
106 }
107
108 float fahrenheitToCelsius(float f) { return (f - 32) * 5 / 9; }

```

```
109 float celsiusToFahrenheit(float c) { return (c * 9 / 5) + 32; }
110
111 // ---- Currency Conversion ---
112 void currencyConversion() {
113     int choice;
114     float amount;
115     const float rate = 58.0;
116
117     cout << "\n1. Dollars to Pesos\n2. Pesos to Dollars\n";
118     cout << "Enter your choice: ";
119     cin >> choice;
120
121     if (choice == 1) {
122         cout << "Enter amount in Dollars: $";
123         cin >> amount;
124         cout << "In Pesos: ?" << dollarsToPesos(amount) << endl;
125     } else if (choice == 2) {
126         cout << "Enter amount in Pesos: ?";
127         cin >> amount;
128         cout << "In Dollars: $" << pesosToDollars(amount) << endl;
129     } else {
130         cout << "Invalid choice.\n";
131     }
132 }
133
134 float dollarsToPesos(float d) { return d * 58.0; }
135 float pesosToDollars(float p) { return p / 58.0; }
136
```

RESULTS:

ARITHMETIC OPERATIONS:

```
=====
      FUNCTION MENU PROGRAM
=====
1. Arithmetic Operations
2. Temperature Conversion
3. Currency Conversion
4. Exit
Enter your choice: 1

Enter two integer values: 88
69

Results:
Addition: 157
Subtraction: 19
Multiplication: 6072
Division: 1.27536

-----
Process exited after 18.22 seconds with return value 0
Press any key to continue . . . |
```

TEMPERATURE CONVERSION:

FAHRENHEIT TO CELSIUS:

```
=====
      FUNCTION MENU PROGRAM
=====
1. Arithmetic Operations
2. Temperature Conversion
3. Currency Conversion
4. Exit
Enter your choice: 2

1. Fahrenheit to Celsius
2. Celsius to Fahrenheit
Enter your choice: 1
Enter temperature in Fahrenheit: 70
In Celsius: 21.1111C

-----
Process exited after 15.01 seconds with return value 0
Press any key to continue . . . |
```

CELSIUS TO FAHRENHEIT:

```
=====
      FUNCTION MENU PROGRAM
=====
1. Arithmetic Operations
2. Temperature Conversion
3. Currency Conversion
4. Exit
Enter your choice: 2

1. Fahrenheit to Celsius
2. Celsius to Fahrenheit
Enter your choice: 2
Enter temperature in Celsius: 70
In Fahrenheit: 158°F

-----
Process exited after 22.6 seconds with return value 0
Press any key to continue . . . |
```

CURRENCY CONVERSION:

DOLLARS TO PESOS:

```
=====
      FUNCTION MENU PROGRAM
=====
1. Arithmetic Operations
2. Temperature Conversion
3. Currency Conversion
4. Exit
Enter your choice: 3

1. Dollars to Pesos
2. Pesos to Dollars
Enter your choice: 1
Enter amount in Dollars: $70
In Pesos: ?4060

-----
Process exited after 13.5 seconds with return value 0
Press any key to continue . . . |
```

PESOS TO DOLLARS:

```
=====
FUNCTION MENU PROGRAM
=====
1. Arithmetic Operations
2. Temperature Conversion
3. Currency Conversion
4. Exit
Enter your choice: 3

1. Dollars to Pesos
2. Pesos to Dollars
Enter your choice: 2
Enter amount in Pesos: ?70
In Dollars: $1.2069

-----
Process exited after 14.73 seconds with return value 0
Press any key to continue . . . |
```

7. Supplementary Activity

CODE:

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

```
// Function Prototypes
void arithmeticOperations();
void temperatureConversion();
void currencyConversion();
```

```
// Arithmetic operations function prototypes
int add(int a, int b);
int subtract(int a, int b);
int multiply(int a, int b);
float divide(int a, int b);
```

```
// Temperature conversions function prototypes
float fahrenheitToCelsius(float f);
float celsiusToFahrenheit(float c);
```

```
// Currency conversions function prototypes
float dollarsToPesos(float d);
float pesosToDollars(float p);
```

```
// Main Function
```

```
int main() {
    int choice;

    cout << "=====\n";
    cout << "  FUNCTION MENU PROGRAM\n";
    cout << "=====\n";
    cout << "1. Arithmetic Operations\n";
    cout << "2. Temperature Conversion\n";
    cout << "3. Currency Conversion\n";
    cout << "4. Exit\n";
    cout << "Enter your choice: ";
    cin >> choice;

    switch (choice) {
        case 1:
            arithmeticOperations();
            break;
        case 2:
            temperatureConversion();
            break;
        case 3:
            currencyConversion();
            break;
        case 4:
            cout << "Exiting program. Goodbye!\n";
            break;
        default:
            cout << "Invalid choice! Please try again.\n";
    }

    return 0;
}
```

```
// =====
// Function Definitions
// =====
```

```
// ---- Arithmetic Operations ----
```

```
void arithmeticOperations() {
    int a, b;
    cout << "\nEnter two integer values: ";
    cin >> a >> b;

    cout << "\nResults:";
    cout << "\nAddition: " << add(a, b);
    cout << "\nSubtraction: " << subtract(a, b);
    cout << "\nMultiplication: " << multiply(a, b);
    if (b != 0)
```



```

    cout << "\nDivision: " << divide(a, b);
else
    cout << "\nDivision: Undefined (division by zero!)";

    cout << endl;
}

int add(int a, int b) { return a + b; }
int subtract(int a, int b) { return a - b; }
int multiply(int a, int b) { return a * b; }
float divide(int a, int b) { return static_cast<float>(a) / b; }

// ---- Temperature Conversion ----
void temperatureConversion() {
    int choice;
    float temp;
    cout << "\n1. Fahrenheit to Celsius\n2. Celsius to Fahrenheit\n";
    cout << "Enter your choice: ";
    cin >> choice;

    if (choice == 1) {
        cout << "Enter temperature in Fahrenheit: ";
        cin >> temp;
        cout << "In Celsius: " << fahrenheitToCelsius(temp) << "°C\n";
    } else if (choice == 2) {
        cout << "Enter temperature in Celsius: ";
        cin >> temp;
        cout << "In Fahrenheit: " << celsiusToFahrenheit(temp) << "°F\n";
    } else {
        cout << "Invalid choice.\n";
    }
}

float fahrenheitToCelsius(float f) { return (f - 32) * 5 / 9; }
float celsiusToFahrenheit(float c) { return (c * 9 / 5) + 32; }

// ---- Currency Conversion ---
void currencyConversion() {
    int choice;
    float amount;
    const float rate = 58.0;

    cout << "\n1. Dollars to Pesos\n2. Pesos to Dollars\n";
    cout << "Enter your choice: ";
    cin >> choice;

    if (choice == 1) {
        cout << "Enter amount in Dollars: $";
        cin >> amount;
        cout << "In Pesos: ?" << dollarsToPesos(amount) << endl;
    } else if (choice == 2) {

```

```

    cout << "Enter amount in Pesos: ?";
    cin >> amount;
    cout << "In Dollars: $" << pesosToDollars(amount) << endl;
} else {
    cout << "Invalid choice.\n";
}
}

float dollarsToPesos(float d) { return d * 58.0; }
float pesosToDollars(float p) { return p / 58.0; }

```

This C++ program that I made is a simple menu-based system using functions. It lets the user choose between three options arithmetic operations, temperature conversion, and currency conversion. I used a switch statement in the main function to handle the user's choice, and each option has its own separate function. For arithmetic, the program takes two integers and performs addition, subtraction, multiplication, and division, with a check to avoid dividing by zero. The temperature conversion part converts between Fahrenheit and Celsius, while the currency conversion allows changing between US Dollars and Philippine Pesos using a fixed exchange rate of 58. In making this program, I tried to organize my code by using function prototypes and defining each function separately for clarity. I think it helps make the program easier to read and understand. However, one thing I noticed is that the program doesn't loop back to the main menu, so if I want to try another option, I have to run it again. Also, I could improve the currency section by making the symbols more consistent. But anyway, I'm happy with how it turned out because it helped me practice using functions, condition statements, and basic user input and output in C++.

8. Conclusion

In this activity, I created a simple C++ program that uses functions to perform different tasks like arithmetic operations, temperature conversion, and currency conversion. I made a menu system using switch statements so the user can pick what they want to do. Each choice has its own function, and I also put function prototypes on top so it looks more organized. I think this activity really helps me understand how functions work and how to separate different parts of the code to make it easier to read and maintain. It was also a nice practice to use condition statements and user inputs.

While making the program, I encountered some errors specially in the syntax and missing semicolon part. At first my currency conversion didn't display the right output because I forgot to use the correct symbols and didn't put the fixed rate properly. I also had some problems in the division part because I didn't check if the user entered zero as denominator, so I have to fix it by adding a condition to avoid division by zero. There are also small errors like wrong spacing and symbols in the peso sign, but I managed to fix most of them after testing the program several times.

I am happy with the outcome of my program even if it's not perfect and sir said that my seatmate has a better code than me hahahah. It successfully runs and performs all the operations correctly. But one thing I notice is that after running one option, it doesn't go back to the main menu, so I need to run the program again if I want to try the other options. I think I can improve it by adding a loop so it will be more user friendly. Still, I learned a lot from this activity, especially about using multiple functions and organizing the code properly even when I made some errors along the way.