0. Casual Discussion, Warm-up Questions, and Lecture Demo Exercises

Casual Discussion, Warm-up Questions

(Spend 5 minutes to complete this part.)

A. Add semi-colons where appropriate:

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

void main()
{
    int x
    cout << "What is the sum of 200 and 9? Your answer: "
    cin >> x
    if (x==200+9)
    {
        cout << "Well done!"
        << endl
    }
    else
    {
        cout << "It is wrong."
        <<endl
    }
}
```

(Also learn how the else-part is designed.)

B. Here is a program segment similar to Lab01 Q04. Fill in the missing quotes and symbols.

```cpp
char choice ;
cout Please input your choice: ;
cin choice ;
if ( choice w )
...
```

C. Will the code segments below display the same output as `cout << "ok";`? If no, what will be displayed? Guess!

- `cout << "o" << "k";`
- `cout << 'o';
  cout << 'k';`
- `char x;
  char y;
  x='o';
y='k';
cout << x;
cout << y;`
- `char x;
  char y;
  x='o';
y='k';
cout << 'x';
cout << "y";`
- `char c1;
  char c2;
c1='o';
c2='k';
c2=c1;
c1=c2;
cout << c1;
cout << c2;`
D. After compilation, we seek to have the result (Fill in the blanks):

Output

Show output from: Build

> Compiling ...
> my_program.cpp
> Linking ...
> Generating code
> ...
> my_project - _______ error(s), _______

E. Which one below will have compilation problem? __________ (a) or (b)

F. Have you seen the following compilation error? Why does it happen?

G. In PASS, if the result is NOT 100% correct, we should click to check what's wrong in every test case. Find out where we should click.

For each test case, PASS has an expected output. PASS will execute your program and check whether the execution result matches the expected output.

In case of "Wrong result", we can compare the __________ column and __________ column.

In the __________ column, we may see a ______ color mark which often tells us where PASS starts complain about.

H. What are whitespaces? ___________________________________________

I. If you have any question in this course (eg. cannot install ..., don't know how to write the program, ...), you can email to __________
Lecture Demo Exercises

Q1. In the Temperature Program, what will occur if we change `C_temp` and `F_temp` to `int` (instead of `double`)?

Q2. What will be the compilation error if our code contains the statements like:

```
int x;
3+4=x;
```

Answer: ________________________________

Q3. What is the output of the following program?

```
int x;
3+4=x;
```

Q4. An example of using `bool`.

(Program based on Lab01_Q04).

The program shows "Wrong input" if we type a wrong choice.

Like setting integer variables to 1,2,3,...

We can set Boolean variables to `true` and `false`.

The logic:

- At the beginning, initialize a flag to `false`.
- If the input is valid, set the flag to `true`.
- In the end, if the flag is still `false`, we say "Wrong input".

Complete the code

```
void main()
{
    char choice;
    bool bInputCorrect;
    cout << "Input your choice ('w' or 'h'): ";
    cin >> choice;
    bInputCorrect=____________;
    if (choice=='w')
    {
        cout << "Welcome World!";
        cout << endl;
        bInputCorrect=____________;
    }
    if (choice=='h')
    {
        cout << "Hello World!";
        cout << endl;
        bInputCorrect=____________;
    }
    if (bInputCorrect==____________)
    {
        cout << "Wrong input.";
        cout << endl;
    }
}
```

This name is good for the flag because it clearly describes the usage (meaningful).
Q5. Extend the swap program to shift 3 values:

```cpp
.. void main()
{
    int value1, value2, value3;

    cout << "Input value1, value2, and value3: ";

    // Input values
    cin >> value1 >> value2 >> value3;

    // Shift values
    int temp = value1;
    value1 = value3;
    value3 = temp;

    // Output after shifting
    cout << "After shifting: " << value1 << " " << value2 << " " << value3 << endl;
}
```

Q6. (a) Complete the following code which shows the hour in 12-hours format (based on a 24-hours input).

```cpp
.. void main()
{
    int hr;

    cout << "Input the hour in 24-hours format: ";
    cin >> hr;

    cout << "The hour in 12-hours format is: ";

    // Output 12-hours format
    cout << hr % 12 << ":00";
    cout << endl;
}
```

(b) Redo the above using one expression only (for A++ students only):

```cpp
.. void main()
{
    int hr;

    cout << "Input the hour in 24-hours format: ";
    cin >> hr;

    cout << "The hour in 12-hours format is: " << hr % 12 << ":00";
    cout << endl;
}
```
Q7. (a) Type conversion between \texttt{int} and \texttt{char}

The \texttt{char} type is internally a 1-byte integer. Conversions are automatically done in some cases:

Examples:
\begin{itemize}
  \item \texttt{cout \ll \charf - \chara;} shows 6.
  \item \texttt{cout \ll \charf - 5;} shows 97.
\end{itemize}
\begin{itemize}
  \item \texttt{char x=65;} sets \texttt{x} to \texttt{'A'}.
  \item \texttt{int x='A';} sets \texttt{x} to 65.
  \item \texttt{\chara<'B'} gives \texttt{true}.
\end{itemize}

(b) Changing from lowercase to uppercase by shifting \texttt{ASCII} code!

```cpp
void main()
{
  char c1, c2, c3, c4, c5;
  cout << "Input a 5-letters word (in lowercase): ";
  cin >> c1 >> c2 >> c3 >> c4 >> c5;

  /* Hint: calculate c1-'a' to give the "distance"
   * between \texttt{c1} and \texttt{'a'}. Then add this distance as
   * an offset to \texttt{'A'}=> uppercase. */
  c1 = ______________________________;
  c2 = ______________________________;
  c3 = ______________________________;
  c4 = ______________________________;
  c5 = ______________________________;

  cout << "The uppercase version is: ";
  cout << c1 << c2 << c3 << c4 << c5 << endl;
}
```

Question:

What will be shown when we run the code below?

```cpp
char x1='a';
char x2='A';
if (x1>x2)
{ char y=x1+1;
  cout \ll x1+1 \ll endl;
  cout \ll y \ll endl;
}
else
{ cout \ll "apple";
}
```
Q8. In the Compound Interest Program, if the starting amount is changed to 900.00, the output is not well aligned. Try to modify the code to improve it (also change the precision to 1):

```
Year 1: 936
Year 2: 973.44
Year 3: 1012.38
Year 4: 1052.87
Year 5: 1094.99
Press any key to continue . . .
```

```
Year 1: 936.0
Year 2: 973.4
Year 3: 1012.4
Year 4: 1052.9
Year 5: 1095.0
Press any key to continue . . .
```

Q9. Refer to the Hourly Session Program in the lecture notes, how to improve it so that the case 23:00-00:00 can be shown correctly? [This question will be included in Lab02.]