COMP2113 Programming Technologies

ENGG1340 Computer Programming II

Module 5 Checkpoint Exercise

Name: YUAN Wenxuan

University ID: 3036292740

Instructions:

For each single question or each group of questions in the Checkpoint exercise, please type your answer right after the question in this Word document.

**Checkpoint 5.1 (Please submit your answer to Moodle)**

Error(s) may include in the following sub-questions. If you think there is/are error(s), try to find out and suggest some way(s) to fix the error(s). If no error, please write “No error”.

|  |
| --- |
| #include <iostream>  using namespace std;  double multiplication(double a, double b){      int result;      result = k \* j;      return result;  }  int main(){      double result;      result = multiplication(2.5, 1.5);      cout << result << endl;      return 0;  } |

Ans:

The variables k and j in line 5 are not consistent with the parameter list defined in line 3. Therefore, the local variables k and j should be replaced by a and b respectively.

|  |
| --- |
| #include <iostream>  using namespace std;  void a(){      a = 8;      void b(){          b = 9;          void c(){              c = 10;          }      }  }  int main(){      // calling b()      b();      return 0;  } |

Ans:

The assignment of a variable to a function and the definition of a function inside another are not allowed. Moreover, the identifiers a, b, and c conflict with the function names. To fix these errors, we can define functions b and c out of function a and change the variable names a, b, and c to other names that will not conflict with function names.

**Checkpoint 5.2 (Please submit your answer to Moodle)**

Student A writes the following code. However, when he compiles the code, some compilation errors are found.

|  |
| --- |
| #include <iostream>  using namespace std;  int main(){      int y = 9;      int x = 7;      int i = 0;      while (i < 3){          if (i % 2 == 0){              g(x);              i++;          }          else{              g(y);              i++;          }      }  }  void g(int& k){      static int num = 6;      if (k % 2 == 0){          num += 2;          k = k + 6;      }      else{          num -= 2;          k = k - 6;      }      cout << num << ", " << k << endl;  } |

a) Find out the errors and suggest some ways to fix the errors.

b) Write down the program output after you fix the errors in (a).

Ans:

A function needs to be declared before using it in lines 10 and 14. Inserting “void g(int &k)” before line 3 would fix it.

4, 1

2, 3

0, -5

**Checkpoint 5.3 (Please submit your answer to Moodle)**

Given the following program:

|  |
| --- |
| #include <cmath>  #include <iostream>  using namespace std;  int k = 10;  void display(int m){      cout << m << endl;  }  int main(){      for (int j = 50; j >= 1; j--){          if (j % 2 == 0){              k = k + j;          }      }      display(k);      return 0;  } |

a) What is the scope of variable k?

b) What is the scope of parameter m?

c) What is the scope of variable j?

Ans:

1. The entire file.
2. The entire function display
3. The for loop statement block

**Checkpoint 5.4 (Please submit your answer to Moodle)**

Given the following program:

|  |
| --- |
| #include <iostream>  using namespace std;  void f(double &p, double &q, double r, double s){      double w;      w = q;      q = p;      p = w;      r = 10 \* p;      s = 100 \* q;  }  int main(){      double a, b, c, d;      b = 1.1;      c = 10.1;      a = 100.1;      d = 1000.1;      f(a, b, c, d);      cout << a << "\n" << b << "\n" << c << "\n" << d << endl;      return 0;  } |

a) Write down the expected program output.

b) What would be the program output if line 4 is replaced by “void f(double &p, double &q, double &r, double &s) {” ?

Ans:

1.1

100.1

10.1

1000.1

1.1

100.1

11

10010