ENGG1340 Computer Programming II

COMP2113 Programming Technologies

Module 5 Checkpoint Exercise

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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:

in function multiplication, result is declared as int, but it should be double.

Also in line5, k and j which are not delcared areused. It should be result = a \* b

|  |
| --- |
| #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:

51b.cpp: In function ‘void a()’:

51b.cpp:5:6: error: assignment of function ‘void a()’

a = 8;

^

51b.cpp:5:6: error: cannot convert ‘int’ to ‘void()’ in assignment

51b.cpp:6:10: error: a function-definition is not allowed here before ‘{’ token

void b(){

^

51b.cpp: In function ‘int main()’:

51b.cpp:15:2: error: ‘b’ was not declared in this scope

b();

Firstly, functions should be declared in other functions, so function a,b,c should be declared separately. Secondly, variable a,b,c are not declared and share the same name with function a,b,c which is not allowed. We should change their name to something like avar, bvar, cvar and declare them.

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

Write down the function prototype (without parameter names), for each of the following functions:

1. A function called largest that takes four double-precision, floating-point arguments, a, b, c and d, and returns a double-precision, floating-point as the result.
2. A function called getPerimeter that does not take any arguments and returns an integer as the result.
3. A function called setPrice that takes a double-precision, floating-point argument, price, and does not return a value.

Ans:

1. double largest(double,double,double ,double)
2. int getPerimeter()
3. void setPrice(double)

**Checkpoint 5.3 (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)

53.cpp: In function ‘int main()’:

53.cpp:11:4: error: ‘g’ was not declared in this scope

g(x);

^

53.cpp:15:4: error: ‘g’ was not declared in this scope

g(y);

^

function g was declared after main(), so we should first declare it.

b)

4,1

2,3

0,-5

**Checkpoint 5.4 (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. global
2. function display()
3. main function

**Checkpoint 5.5 (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:

a)

1.1

100.1

10.1

1000.1

b)

1.1

100.1

11

10010