Started on	Monday, 6 February 2023, 10:25 PM
State	Finished
Completed on	Monday, 6 February 2023, 11:31 PM
Time taken	1 hour 5 mins

Information

Read Sections 2.3 and 2.4 of the text and the lecture handout on references.

To keep code fragments small, it may be necessary to sometimes remove headers from the code. Don't provide ***doesn't compile*** as a valid answer only because certain headers are NOT included in a code fragment. Instead, assume all necessary headers are included in the code fragment.

Since you'll not have access to a compiler during the midterm and final tests, you're strongly urged to use paper and pencil.

Question **1**

Correct

Marked out of 4.00

Given the definitions below

```
int i{-1};
int const i2{i};
```

which of the following definitions are ***illegal***?

Select one or more:

- [ ] `int const * const pi3{&i2};`
- [x] `int *pi4{&i2};` ✔
- [ ] `int *pi{&i};`
- [x] `int * const pi2{&i2};` ✔
- [ ] `int * const pi5{&i};`
- [ ] `const int * pi1{&i};`

Question **2**

Correct

Marked out of 10.00

Given the definitions below:

```
int i = 1.01, *pi{&i};
```

which of the following definitions are ***legal***?

Select one or more:

- [ ] `int* &ri3{&i};`
- [x] `const int & ri7{1.01};` ✔
- [ ] `int& ri1, i2{10};`
- [ ] `int& ri4{pi};`
- [x] `int const &ri6{1};` ✔
- [x] `int *& ri8{pi};` ✔
- [ ] `int &*pri{pi};`
- [x] `int &ri5{*pi};` ✔
- [ ] `int& ri{1.01};`
- [x] `int &ri2{i};` ✔

Question **3**

Correct

Marked out of 2.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact values written to standard output stream.

```
int main() {
  int x {10};
  int & y {x};
  y=20;
  std::cout << x << ',' << y;
}
```

Answer: 20,20 ✔

Question **4**

Correct

Marked out of 2.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact values written to standard output stream.

```
int main() {
  int x {10};
  int & y;
  y = 20;
  std::cout << x << ',' << y;
}
```

Answer: NC ✔

Question **5**

Correct

Marked out of 2.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact values written to standard output stream.

```
int main() {
  int x {10};
  int & y {20};
  y = 30;
  std::cout << x << ',' << y;
}
```

Answer: NC ✔

Question **6**

Correct

Marked out of 3.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact value written to standard output stream.

```
int main() {
  int x{10}, xx{100}, &y{x};
  y = xx;
  ++y;
  std::cout << x << ',' << xx << ',' << y;
}
```

Answer: 101,100,101 ✔

Question **7**

Correct

Marked out of 2.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact value written to standard output stream.

```
int main() {
  int x {10};
  int const & y {x};
  y = 30;
  std::cout << x << ',' << y;
}
```

Answer: NC ✔

Question **8**

Correct

Marked out of 2.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the value in variable `flag` as either `true` or `false`.

```
int main() {
  int x{10}, *p{&x};
  int const& r{x};
  bool flag {*p == r};
  // other stuff not involving variable flag ...
}
```

Answer: true ✔

Question **9**

Correct

Marked out of 3.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact values written to standard output stream.

```
int secret(int &aa) {
  return ++aa;
}

int main() {
  int xx{};
  std::cout << xx << ',' << secret(xx) << ',' << xx;
}
```

Answer: 0,1,1 ✔

Question **10**

Correct

Marked out of 4.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact values written to standard output stream.

```
void mystery(int& x, int *y) {
  int temp = x;
  x = *y;
  *y = temp;
}

int main() {
  int a{10}, b {20};
  mystery(a, &b);
  std::cout << a << ',' << b;
}
```

Answer: 20,10 ✔

Question **11**

Correct

Marked out of 4.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact values written to standard output stream.

```
void mystery(int const &x, int const& y) {
  int temp {x};
  x = y;
  y = temp;
}

int main() {
  int a {10}, b {20};
  mystery(a, b);
  std::cout << a << ',' << b;
}
```

Answer: NC ✔

Question **12**

Correct

Marked out of 6.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact values written to standard output stream.

```
void secret(int& x, int& y) {
  x = x - y;
  y = y + x;
  x = y - x;
}

int main() {
  int one{4}, two{3};
  secret(one, two);
  int x1{one}, x2{two};
  secret(two, two);
  int x3{two};
  secret(one, one);
  int x4{one};
  std::cout << x1 << ',' << x2 << ',' << x3 << ',' << x4;
}
```

Answer: 3,4,0,0 ✔

Question **13**

Correct

Marked out of 4.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact value written to standard output stream.

```
void secret(int x, int& y, int& z) {
  z = x + y;
  int tmp = x;
  x = y;
  y = 2*tmp;
}

int main() {
  int one{5}, two{10}, three{15};
  secret(one, two, three);
  int x {one + two + three};
  secret(two, one, three);
  x += one + two + three;
  std::cout << x;
}
```

Answer: 75 ✔

Question **14**

Correct

Marked out of 4.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact value written to standard output stream.

```
void boo(int&, int);
void foo(int, int&);

int gx{6};

int main() {
  int one{2}, two{5};
  boo(one, two);
  int x {one + two};
  foo(one, two);
  x += one - two;
  std::cout << x;
}

void boo(int& x, int y) {
  int one{y + 12};
  x = 2 * y + 5;
  y = one + 4;
}

void foo(int x, int& y) {
  int gx{::gx};
  y = gx * 4;
  ::gx = x - y;
}
```

Answer: 11 ✔

Question **15**

Correct

Marked out of 6.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact value written to standard output stream.

```
namespace {
int mystery(int&);
}

int main() {
  int x{8};
  std::array<int, 3> A{0, mystery(x), mystery(x)};
  int z{};
  for (int y : A) {
    z += y;
  }
  std::cout << z;
}

namespace {
int num{2};
}

namespace {
int mystery(int& y) {
  y += (y%2) ? --num : ++num;
  return y;
}
}
```

Answer: 24 ✔

Question **16**

Correct

Marked out of 5.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact value written to standard output stream.

```
int& foo(int x) {
  int val {++x};
  return val;
}

int boo(int x) {
  return x+10;
}

int main() {
  int& ri { foo(10) };
  ri = boo(ri);
  std::cout << ri;
}
```

Answer: UB ✔

Question **17**

Correct

Marked out of 6.00

If the following code fragment doesn't compile, write **NC**. Write **UB** if the program compiles but has undefined behavior. Otherwise, write the exact value written to standard output stream.

```
int &secret(int &a, int b) {
  return a += b;
}

int main() {
  int x{};
  std::cout << secret(secret(secret(x,3),2),1);
}
```

Answer: 6 ✔

◄ Assignment 4: Interfaces/Implementations with Doubly Linked Lists

Jump to...

Quiz 5: Review of C++ Function Overloading ►