

CS H Quiz 1 - Solution

Question 1

Given Code

```
int *x, *y;
int a = 20
x = new int;
*x = 25;
y = &a;
x = y;
cout << *x << *y;
```

Error

- Missing semicolon after `int a = 20`
- Dynamically allocated memory is overwritten, causing memory leak

Correction

```
int *x, *y;
int a = 20;
x = new int;
*x = 25;
y = &a;
delete x;    // free allocated memory
x = y;
cout << *x << *y;
```

Question 2

Given Code

```
int* func(int a){
    int arr[5];
    for(int i = 0; i < 5; i++)
        arr[i] = a;
    return arr;
}
```

Error

- Returning address of a local array, which is destroyed after function ends

Correction

```
void func(int arr[], int a) OR void func(int* arr, int a)
{
    for(int i = 0; i < 5; i++)
        arr[i] = a;
}
```

Question 3

Given Code

```
void func(int* arr, int size){
    for(int i = 0; i <= size; ++i)
        std::cout << *(arr + i) << std::endl;
}
```

Error

- `i <= size` makes the index access out of bounds.

Correction

```
void func(int* arr, int size)
{
    for(int i = 0; i < size; ++i)
        std::cout << *(arr + i) << std::endl;
}
```

Question 4

Given Code

```
char s[] = "this is a character array";
for(; *s != '\0'; ++s)
    cout << *s << ' ';
```

Error

- Array name cannot be incremented directly

Correction

```
char s[] = "this is a character array";
for(char* p = s; *p != '\0'; ++p)
    cout << *p << ' ';
```

Question 5

Given Code

```
int main(){
    int* ptr;
    std::cout << *ptr << std::endl;
    return 0;
}
```

Error

- An uninitialized pointer is dereferenced

Correction

```
int main(){
    int n = 10; //initialize with some value
    int* ptr = &n;
    std::cout << *ptr << std::endl;
    return 0;
}
```