# C++ (ENGLISH)

Ismertető a feladatlaphoz

Please make sure you read the instructions below before starting the worksheet:

Rankings will be shown after the 4th round, in percentage form: you will be in the top 20-40-60% in a given category.

Any questionnaire solved in a noticeably short time will be disqualified, in any other suspicious case we reserve the right to invalidate the round!

We wish you a good competition!
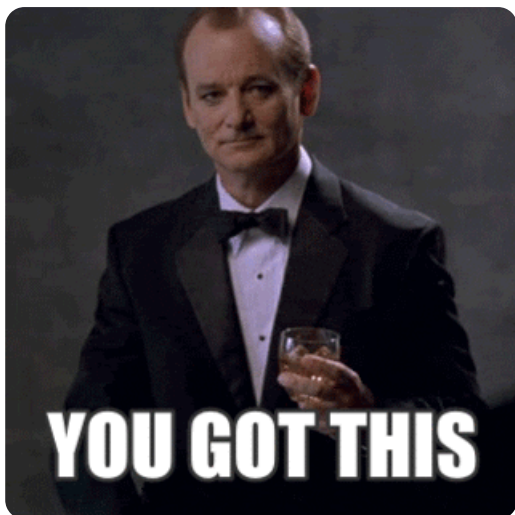
This round is made up of C++ language riddles that can have one or more correct answers, or that require a short answer. You cannot copy the code snippets for these problems.

1. feladat   10 pont

Money

Please inspect the following code with the C++ standard and common practices of the most common compilers (g++, MSVC, clang) in mind.

```cpp
C/C++
#include <iostream>

int main() {
    /* MISSING CODE */ = 0x99;
    if (x == 0x99)
      std::cout << "yes";
    else
      std::cout << "no";
    return 0;
}
```

Select a replacement for **/* MISSING CODE */**, so the program will compile and link, but will print no! Check all the answers that apply!

Válaszok

☐ *thread_local int x*

☐ *char const &x*

☐ *int const * const x*

☐ *static char const x*

☐ *constexpr int x[]*

☐ *mutable register long long x*

☐ *int x = 3, y*

2. feladat   10 pont

Spotless

What happens when we compile and run the following C++ program?

```
C/C++
struct A {
  virtual ~A(){ g(this); };
  virtual int meaning() const = 0;
  static int g(A *a){
    return a->meaning();
  }
};

struct B: public virtual A {
  B(): A() { }
  int meaning() const override {
    return wisdom;
  }
  mutable int wisdom = 42;
};

int main(){
  B b;
  return 0;
}
```

Select all answers that apply:

Válasz

○ Will result in undefined behavior, because the memory occupied by B (except for the part occupied by A) is already freed and wisdom is in that area.

○ Will not compile because A does not have a constructor which is explicitly called from B's constructor.

○ Will result in undefined behavior for other reason.

○ Will not compile because only classes can have virtual functions, structs cannot.

3. feladat 10 pont

Four is significant, four is a lot

Please inspect the following code with the C++ standard and common practices of the most common compilers (g++, MSVC, clang) in mind.

```
C/C++
#include <iostream>
#include <cstdint>
#include <vector>

int f(){
  return 3,4;
}

int main() {
  int32_t a[] = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16};
  std::vector<int32_t> b({1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16});
  std::cout << /* MISSING CODE */;
  return 0;
}
```

Select a replacement for /* **MISSING CODE** */, so the program will compile and link, but will print 4 (one '4' character)! Check all the answers that apply!

Válaszok

- [ ] a[3]
- [ ] b[3]
- [ ] 5
- [ ] sizeof(*a)
- [ ] sizeof(*b)
- [ ] 020/04
- [ ] *(a + 3*sizeof(int32_t))
- [ ] (sizeof(int32_t) * (&b[1]-&b[0]))
- [ ] (&b[0]-&a[0])/4
- [ ] f()
- [ ] (1 << 3 >> 1)

---

4. feladat   10 pont

Make it compile

```cpp
C/C++
class A {
    A(int n): x(n) {}
    int x;
};

int main()
{
    // Which of the following line(s) have to be removed to make it compile in
    c++20:
    // vvvv    Which line(s) remove    vvvv
    A v1 = 1;
    auto v2 = [](){};
    auto v3 = -8<=>8;
    auto v4 = &main;
    int  v5[] = {1, 2, 3, 4};
    auto v6 = 2[v5];
    // ^^^^    Which line(s) remove    ^^^^
}
```

Select all that apply:

Válaszok

- [ ]
      A v1 = 1;

```cpp
auto v2 = [](){};
```

```cpp
auto v3 = -8<=>8;
```

```cpp
auto v4 = &main;
```

```cpp
int  v5[] = {1, 2, 3, 4};
```

```cpp
auto v6 = 2[v5];
```

Megoldások beküldése