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|-----[ .NET Instrumentation via MSIL bytecode injection ]-----|
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--[1 - Introduction

In this article we will explore the internals of the .NET framework with the purpose of providing an innovative method to instrument .NET programs at runtime.

Actually, there are several libraries that allow to instrument .NET programs; most of them install a hook in the code generated after compiling a given method, or by modifying the Assembly and saving back the result of the modification.

Microsoft also provides a profile API in order to instrument the execution of a given program. However the API must be activated before executing the program by setting specific environment variables.

Our goal is to instrument the program at runtime by leaving the Assembly binary untouched; all this by using a high level .NET language. As we will see, this is done by injecting additional MSIL code just before the target method is compiled.

--[2 - CLR environment

Before describing in depth how to inject additional MSIL code in a method, it is necessary to provide some basic concepts as on how the .NET framework works and which are its basic components.

We will only describe the concepts that are relevant to our purpose.

---[2.1 - Basic concepts

A .NET binary is typically called Assembly (even if it doesn't contain any

assembly code). It is a self-describing structure, meaning that inside an Assembly you will find all the necessary information to execute it (for more information on this subject see [01]).

As we will shortly see, all this information can be accessed by using reflection. Reflection allows us to have a full picture of which types and methods are defined inside the Assembly. We can also have access to the names and types of the parameters passed to a specific method. The only missing information are the names of the local variables, but as we will see this is not a problem at all.

----[2.1.1 - Metadata tables

All the above mentioned information is stored inside tables called Metadata tables.

The following list taken from [02] shows the index and names of all the existing tables:

00 - Module	01 - TypeRef	02 - TypeDef
04 - Field	06 - MethodDef	08 - Param
09 - InterfaceImpl	10 - MemberRef	11 - Constant
12 - CustomAttribute	13 - FieldMarshal	14 - DeclSecurity
15 - ClassLayout	16 - FieldLayout	17 - StandAloneSig
18 - EventMap	20 - Event	21 - PropertyMap
23 - Property	24 - MethodSemantics	25 - MethodImpl
26 - ModuleRef	27 - TypeSpec	28 - ImplMap
29 - FieldRVA	32 - Assembly	33 - AssemblyProcessor
34 - AssemblyOS	35 - AssemblyRef	36 - AssemblyRefProcessor
37 - AssemblyRefOS	38 - File	39 - ExportedType
40 - ManifestResource	41 - NestedClass	42 - GenericParam
44 - GenericParamConstraint		

Each table is composed of a variable number of rows. The size of a row depends on the kind of table and can contain a reference to other Metadata tables.

Those tables are referenced by the Metadata token, a notion that is described in the next paragraph.

----[2.1.2 - Metadata token

The Metadata token (or token for short) is a fundamental concept in the CLR framework. A token allows you to reference a given table at a given index. It is a 4-byte value, composed of two parts [08]: a table index and the RID.

The table index is the topmost byte which points to a table. A RID is a 3-byte record identifier pointing in the table, which starts at offset one.

As an example, let's consider the following Metadata token:

(06)00000F

0x06 is the number of the referenced table, which in this case is MethodDef. The last three bytes are the RID, that in this case has a value of 0x0F.

----[2.1.3 - MSIL bytecode

When we write a program in a .NET high level language, the compiler will translate this code into an intermediate representation called MSIL or as defined in the ECMA-335 [03] CIL, which stands for Common Intermediate Language.

By installing Visual Studio you will also install a very handy utility

called ILDasm, that allows you to disassemble an Assembly by displaying the MSIL code and other useful information.

As an example let try to compile the following C# source code:

```
-----#-----#-----#-----<START CODE>-----#-----#-----#-----
public class TestClass
{
    private String _message;

    public TestClass(String txt)
    {
        this._message = txt;
    }

    private String FormatMessage()
    {
        return "Hello " + this._message;
    }

    public void SayHello()
    {
        var message = this.FormatMessage();
        Console.WriteLine(message);
    }
}
-----#-----#-----#-----<END CODE>-----#-----#-----#-----
```

The result of the compilation is an Assembly with three methods:
.ctor : void(string), FormatMessage : string() and SayHello : void().

Let's try to display the MSIL code of the SayHello method:

```
-----#-----#-----#-----<START CODE>-----#-----#-----#-----
.method public hidebysig instance void SayHello() cil managed
// SIG: 20 00 01
{
    // Method begins at RVA 0x21f8
    // Code size      16 (0x10)
    .maxstack 1
    .locals init ([0] string message)
    IL_0000: /* 00  |          */ nop
    IL_0001: /* 02  |          */ ldarg.0
    IL_0002: /* 28  | (06)00000F */
        call instance string MockLibrary.TestClass::FormatMessage()
    IL_0007: /* 0A  |          */ stloc.0
    IL_0008: /* 06  |          */ ldloc.0
    IL_0009: /* 28  | (0A)000014 */
        call void [mscorlib]System.Console::WriteLine(string)
    IL_000e: /* 00  |          */ nop
    IL_000f: /* 2A  |          */ ret
} // end of method TestClass::SayHello
-----#-----#-----#-----<END CODE>-----#-----#-----#-----
```

For each instruction we can see the associated MSIL byte values. It is interesting to see that the code doesn't contain any reference to unmanaged memory but only to metadata tokens.

The two call instructions reference two different tables, due to the FormatMessage method being implemented in the current Assembly and the WriteLine method implemented in an external Assembly.

If we take a look at the list of tables presented in 2.1.1 we can see that the Metadata token (0A)000014 references the table 0x0A which is the MemberRef table, index 0x14 which is WriteLine. Instead the token (06)00000F references the table 0x06 which is the MethodDef table, index 0x0F which is FormatMessage.

---[2.2 - Execution environment

The CLR execution environment is very strict and forbids any kind of dangerous operation. If we compare it with the unmanaged world where we were able to jump in the middle of an instruction to confuse the disassembler, to create all kinds of opaque instructions or to jump to any valid address, we will discover a sad truth: everything is forbidden.

The CLR is a stack based machine. This means that there is no concept of registers and every parameter is pushed on the stack in order to be passed to other functions. When we exit a method, the stack must be empty or at least contain the value that should be returned.

As already said, everything is based on the definition of the Metadata token. If we try to invoke a call with an invalid token we will receive a fatal exception. This poses a serious problem for our goal, since we cannot call methods that are not referenced by the original Assembly.

--[3 - JIT compiler

When a method is executed we have two different scenarios. The first one is when the method is already compiled, in this case the code just jumps to the compiled unmanaged code. The second scenario is when the method isn't yet compiled, in this case the code jumps to a stub that will call the exported method `compileMethod`, defined in `corjit.h` [04], in order to compile and then execute the method.

---[3.1 - The `compileMethod`

Let's analyze this interesting method a bit more. The signature of `compileMethod` is the following:

```
virtual CorJitResult __stdcall compileMethod (
    ICorJitInfo          *comp,          /* IN */
    struct CORINFO_METHOD_INFO *info,     /* IN */
    unsigned /* code:CorJitFlag */ flags, /* IN */
    BYTE                 **nativeEntry,   /* OUT */
    ULONG                 *nativeSizeOfCode /* OUT */
) = 0;
```

The most interesting structure is the `CORINFO_METHOD_INFO` which is defined in `corinfo.h` [05] and has the following format:

```
struct CORINFO_METHOD_INFO
{
    CORINFO_METHOD_HANDLE ftn;
    CORINFO_MODULE_HANDLE scope;
    BYTE *                ILCode;
    unsigned              ILCodeSize;
    unsigned              maxStack;
    unsigned              EHcount;
    CorInfoOptions        options;
    CorInfoRegionKind     regionKind;
    CORINFO_SIG_INFO      args;
    CORINFO_SIG_INFO      locals;
};
```

For our purpose the most important field is the `ILCode` byte pointer. It points to a buffer which contains the MSIL bytecode. By modifying this buffer we are able to alter the method execution flow.

As a side note, this method is also extensively used by .NET obfuscators. In fact we can read the following comment in the source code:

Note: Obfuscators that are hacking the JIT depend on this method having `__stdcall` calling convention

An obfuscator typically encrypts the MSIL bytecode of a method, then when the method is bound to be executed they decrypt the bytecode and pass this value as byte pointer instead of the encrypted one. This also explains why if we open it in ILDasm or with a decompiler we receive back an error. How can they know when a method is going to be called? This is pretty easy, the code in charge for the replacement process is placed inside the type constructor. This specific constructor is invoked only once: before a new object of that specific type is created.

---[3.2 - Hooking the compileMethod

Since the compileMethod is exported by the Clrjit.dll (or from mscorjit.dll for older .NET versions), we can easily install a hook to intercept all the requests for compilation. The following F# pseudo-code shows how to do this:

```
-----#-----#-----#-----<START CODE>-----#-----#-----#-----
[<DllImport(
    "Clrjit.dll",
    CallingConvention = CallingConvention.StdCall, PreserveSig = true)
>]
extern IntPtr getJit()

[<DllImport("kernel32.dll", SetLastError = true)>]
extern Boolean VirtualProtect(
    IntPtr lpAddress,
    UInt32 dwSize,
    Protection flNewProtect,
    UInt32& lpflOldProtect)

let pVTable = getJit()
_pCompileMethod <- Marshal.ReadIntPtr(pVTable)

// make memory writable
let mutable oldProtection = uint32 0
if not <| VirtualProtect(
    _pCompileMethod,
    uint32 IntPtr.Size,
    Protection.PAGE_EXECUTE_READWRITE,
    &oldProtection)
then
    Environment.Exit(-1)

let protection = Enum.Parse(
    typeof<Protection>,
    oldProtection.ToString()) :?> Protection

// save original compile method
_realCompileMethod <-
    Some (Marshal.GetDelegateForFunctionPointer(
        Marshal.ReadIntPtr(_pCompileMethod),
        typeof<CompileMethodDeclaration>) :?> CompileMethodDeclaration
    )
RuntimeHelpers.PrepareDelegate(_realCompileMethod.Value)
RuntimeHelpers.PrepareDelegate(_hookedCompileMethodDelegate)

// install compileMethod hook
Marshal.WriteIntPtr(
    _pCompileMethod,
    Marshal.GetFunctionPointerForDelegate(_hookedCompileMethodDelegate)
)

// reprimstate memory protection flags
VirtualProtect(
    _pCompileMethod,
    uint32 IntPtr.Size,
    protection,
    &oldProtection
```

```

) |> ignore
-----#-----#-----#-----<END    CODE>-----#-----#-----#-----

```

When we modify the MSIL code we must pay attention to the stack size. Our framework needs some stack space in order to work and if the method that is going to be compiled doesn't need any local variables, we will receive an exception at runtime. In order to fix this problem it is enough to modify the maxStack variable of CORINFO_METHOD_INFO structure before writing it back.

--[4 - .NET Instrumentation

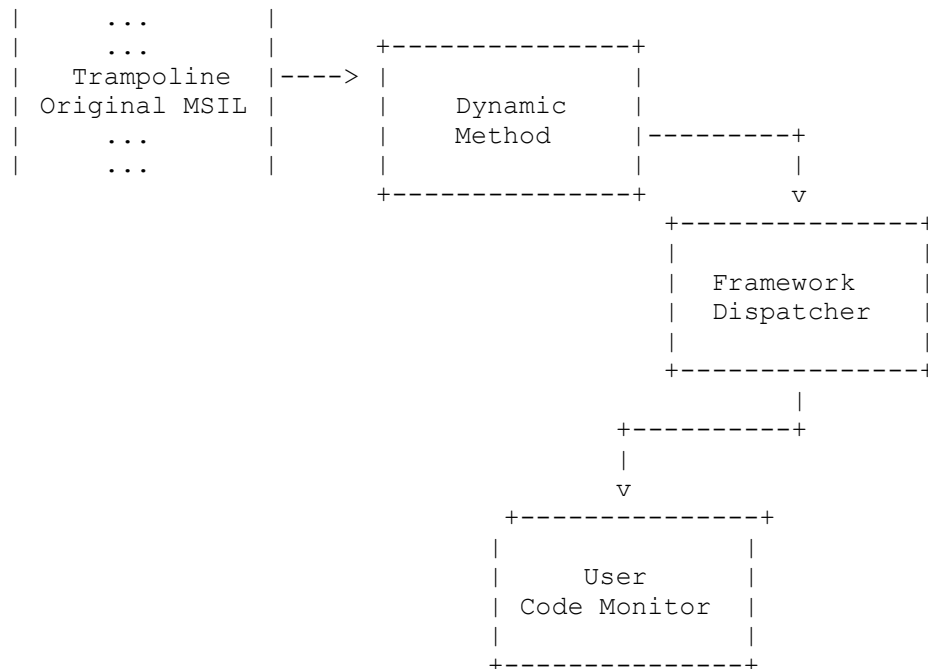
Now it is time to modify the MSIL buffer of our method of choice and redirect the flow to our code. As we will see this is not a smooth process and we need to take care of numerous aspects.

---[4.1 - MSIL injection strategy

In order to invoke our code the process that we will follow is composed of the following steps:

1. Install a trampoline at the beginning of the code. This trampoline will call a dynamically defined method.
2. Define a dynamic method that will have a specific method signature.
3. Construct an array of objects that will contain the parameters passed to the method.
4. Invoke a dispatcher function which will load our Assembly and will finally call our code by passing a handle to the original method and an array of objects representing the method parameters.

In the end the structure that we are going to create will follow the path defined in the following diagram:



---[4.2 - Resolving the method handle

As we will see in the next paragraph, it is necessary to resolve the handle of the method that will be compiled in order to obtain the needed information via reflection. I have found a method to resolve it, it is not very elegant but it works :P.

The following F# pseudo-code will show you how to resolve a method handle given the CorMethodInfo structure:

```
-----#-----#-----#-----<START CODE>-----#-----#-----#-----
let getMethodInfoFromModule(
    methodInfo: CorMethodInfo,
    assemblyModule: Module) =
    let mutable info: FilteredMethod option = None
    try
        // dirty trick, is there a
        // better way to know the module of the compiled method?
        let mPtr =
            assemblyModule.ModuleHandle.GetType()
            .GetField("m_ptr",
                BindingFlags.NonPublic ||| BindingFlags.Instance)
        let mPtrValue = mPtr.GetValue(assemblyModule.ModuleHandle)
        let mpData =
            mPtrValue.GetType()
            .GetField("m_pData",
                BindingFlags.NonPublic ||| BindingFlags.Instance)

        if mpData <> null then
            let mpDataValue = mpData.GetValue(mPtrValue) :?> IntPtr
            if mpDataValue = methodInfo.ModuleHandle then
                // module found, get method name
                let tokenNum =
                    Marshal.ReadInt16(nativeint(methodInfo.MethodHandle))
                let token = (0x06000000 + int32 tokenNum)
                let methodBase = assemblyModule.ResolveMethod(token)

                if methodBase.DeclaringType <> null &&
                    isMonitoredMethod(methodBase) then
                    let mutable numParameters =
                        methodBase.GetParameters() |> Seq.length
                    if not methodBase.IsStatic then
                        // take into account the this parameter
                        numParameters <- numParameters + 1

                    // compose the result info
                    info <- Some {
                        TokenNum = tokenNum
                        NumOfArgumentsToPushInTheStack = numParameters
                        Method = methodBase
                        IsConstructor = methodBase :? ConstructorInfo
                        Filter = this
                    }

            with _ -> ()
            info
    -----#-----#-----#-----<END CODE>-----#-----#-----#-----
```

This method must be invoked for each module of all loaded Assemblies.

Now that we have a MethodBase object, we can use it to extract the needed information, like the number of accepted parameters and their types.

---[4.3 - Implementing a trampoline via the calli instruction

Our first obstacle is to create a MSIL bytecode that can invoke an arbitrary function. Among all the available OpCodes, the one of interest for us is the calli instruction [06] (beware of its usage, as it makes our code unverifiable).

From the MSDN page we can read that:

"The method entry pointer is assumed to be a specific pointer to native code (of the target machine) that can be legitimately called with the arguments described by the calling convention (a metadata token for a

stand-alone signature). Such a pointer can be created using the Ldftn or Ldvirtftn instructions, or passed in from native code."

Nice, we can specify an arbitrary pointer to native code. The only difficulty is that we cannot use the Ldftn or Ldvirtftn since they need a metadata token, and we cannot specify this value. Not too bad, since from the Ldftn documentation we can read that [07]:

"Pushes an unmanaged pointer (type native int) to the native code implementing a specific method onto the evaluation stack."

So, if we have an unmanaged pointer we can simulate the Ldftn with a simple Ldc_I4 instruction (supposing that we are operating on a 32 bit environment) [09].

Unfortunately now we have another, even bigger, problem. The calli instruction needs a callSiteDescr. From [08] we can read that:

"<token> - referred to callSiteDescr - must be a valid StandAloneSig".

The StandAloneSig is the table number 17. As I have already said we cannot specify this Metadata token (since it probably doesn't exist in the table).

I have played a bit with the calli instruction in order to see if it accepts also other kinds of Metadata tokens. In the end I discovered that it also accepts a token from one of the following tables: TypeSpec, Field and MethodDef.

For our purpose, the MethodDef table is the most interesting one, since we can fake a valid MethodDef token by creating a DynamicMethod (more on this later). We can now close the circle by using the calli instruction and modifying the metadata token in order to specify a MethodDef.

We will use the MethodBase object that we obtained in the previous step in order to know how many parameters the method accepts and push them in the stack before invoking calli.

The following F# pseudo-code shows how to build the calli instruction:

```
-----#-----#-----#-----<START CODE>-----#-----#-----#-----
// load all arguments on the stack
for i=0 to filteredMethod.NumOfArgumentsToPushInTheStack-1 do
    ilGenerator.Emit(OpCodes.Ldarg, i)

// emit calli instruction with a pointer to the dynamic method,
// the token used by the calli is not important as I'll modify it soon
ilGenerator.Emit(OpCodes.Ldc_I4, functionAddress)
ilGenerator.EmitCalli(
    OpCodes.Calli,
    CallingConvention.StdCall,
    dispatcherMethod.ReturnType,
    dispatcherArgs)

// this index allow to modify the right byte
let patchOffset = ilGenerator.ILOffset - 4
ilGenerator.Emit(OpCodes.Nop)

// check if I have to pop the return value
match filteredMethod.Method with
| :? MethodInfo as mi ->
    if mi.ReturnType <> typeof<System.Void> then
        ilGenerator.Emit(OpCodes.Pop)
| _ -> ()

// end method
ilGenerator.Emit(OpCodes.Ret)
-----#-----#-----#-----<END CODE>-----#-----#-----#-----
```

The functionAddress variable contains the native pointer of our dynamic

method. One last step is to patch the calli Metadata token with a MethodDef token whose value we know to be correct. As value we will use the token of the method that it is being compiled.

The following F# pseudo-code show how to modify the MSIL bytecode at the right offset:

```
-----#-----#-----#-----<START CODE>-----#-----#-----#-----
// craft MethodDef metadata token index
let b1 = (filteredMethod.TokenNum &&& int16 0xFF00) >>> 8
let b2 = filteredMethod.TokenNum &&& int16 0xFF

// calli instruction accept 0x11 as table index (StandAloneSig),
// but seems that also other tables are allowed.
// In particular the following ones seem to be accepted as
// valid: TypeSpec, Field and Method (most important)
trampolineMsil.[patchOffset] <- byte b2
trampolineMsil.[patchOffset+1] <- byte b1
trampolineMsil.[patchOffset + 3] <- 6uy // 6(0x6): MethodDef Table
-----#-----#-----#-----<END CODE>-----#-----#-----#-----
```

Since this step is a bit complex let's try to summarize our actions:

1. We use the calli instruction to invoke an arbitrary method by specifying a native address pointer.
2. We modify the calli metadata token by specifying a MethodDef token and not a StandAloneSig token.
3. We pass as Metadata token value the token of the method currently compiled. This kind of token describes the method that must be called.

Our next step is to be sure that the method invoked by calli satisfies the information contained in the referenced Metadata token.

---[4.4 - Crafting a dynamic method

We now have to create the dynamic method that satisfies the information provided by the token passed to the calli instruction. From [10] we can read that:

"The method descriptor is a metadata token that indicates the method to call and the number, type, and order of the arguments that have been placed on the stack to be passed to that method as well as the calling convention to be used."

So, in order to create a method that satisfies the signature of the method referenced by the token we will use a very powerful .NET capability, which allows us to define dynamic method. This step allows the following:

1. Create a method that has the same signature of the method that will be compiled. This will guarantee that the information carried by the metadata token is legit.
2. We are now in a situation where we can specify a valid metadata token, since the new dynamic type is created in the current execution environment.

This dynamic method will call another method (a dispatcher) that accepts two arguments: a string representing the location of the Assembly to load (more on this later) and an array of objects which contains the arguments passed to the method.

In creating this method you have to pay attention when creating the objects array, since in .NET not everything is an object.

The following F# pseudo-code creates the dynamic method with the right signature:

```

-----#-----#-----#-----<START CODE>-----#-----#-----#-----
let argumentTypes = [|
    if not filteredMethod.Method.IsStatic then
        yield typeof<Object>
    yield!
        filteredMethod.Method.GetParameters()
        |> Array.map(fun p -> p.ParameterType)
|]

let dynamicType =
    _dynamicModule.DefineType(
        filteredMethod.Method.Name + "_Type" + string(!_index))
let dynamicMethod =
    dynamicType.DefineMethod(
        dynamicMethodName,
        MethodAttributes.Static |||
        MethodAttributes.HideBySig |||
        MethodAttributes.Public,
        CallingConventions.Standard,
        typeof<System.Void>,
        argumentTypes
    )
-----#-----#-----#-----<END CODE>-----#-----#-----#-----

```

We can now proceed with the creation of the method body. We need to pay attention to two facts: ValueType parameters must be boxed, and Enum parameters must be converted to another form (after some trials and errors I found that Int32 is a good compromise).

```

-----#-----#-----#-----<START CODE>-----#-----#-----#-----
// push the location of the Assembly to load containing the monitors
let assemblyLocation =
    if filteredMethod.Filter.Invokeer <> null
    then filteredMethod.Filter.Invokeer.Assembly.Location
    else String.Empty
ilGenerator.Emit(OpCodes.Ldstr, assemblyLocation)

// get the parameter types
let parameters =
    filteredMethod.Method.GetParameters()
    |> Seq.map(fun pi -> pi.ParameterType)
    |> Seq.toList

// create argv array
ilGenerator.Emit(OpCodes.Ldc_I4,
    filteredMethod.NumOfArgumentsToPushInTheStack)
ilGenerator.Emit(OpCodes.Newarr, typeof<Object>)

// fill the argv array
for i=0 to filteredMethod.NumOfArgumentsToPushInTheStack-1 do
    ilGenerator.Emit(OpCodes.Dup)
    ilGenerator.Emit(OpCodes.Ldc_I4, i)
    ilGenerator.Emit(OpCodes.Ldarg, i)

    // check if I have to box the value
    if filteredMethod.Method.IsStatic || i > 0 then
        // this check is necessary because the
        // GetParameters method doesn't consider the 'this' pointer
        let paramIndex = if filteredMethod.Method.IsStatic then i else i - 1
        if parameters.[paramIndex].IsEnum then
            // consider all enum as Int32 type to avoid access problems
            ilGenerator.Emit(OpCodes.Box, typeof<Int32>)

        elif parameters.[paramIndex].IsValueType then
            // all value types must be boxed
            ilGenerator.Emit(OpCodes.Box, parameters.[paramIndex])

// store the element in the array

```

```

ilGenerator.Emit(OpCodes.Stelem_Ref)

// emit call to dispatchCallback
let dispatchCallbackMethod =
    Type.GetType("ES.Anathema.Runtime.Dispatcher")
    .GetMethod("dispatchCallback", BindingFlags.Static ||| BindingFlags.Public)
ilGenerator.EmitCall(OpCodes.Call, dispatchCallbackMethod, null)

ilGenerator.Emit(OpCodes.Ret)
-----#-----#-----#-----<END    CODE>-----#-----#-----#-----

```

The call will end up invoking a framework method that is in charge for the dispatch of the call to the user defined code.

---[4.5 - Invoking the user defined code

In order to make the code easy to extend, we can implement a mechanism that will load a user defined Assembly and invoke a specific method. In this way we have an architecture that resembles that of a plugin-based architecture. We call these plugins: monitors. Each monitor can be configured in order to intercept a specific method.

In order to locate the monitors we will use the software design paradigm "convention over configuration", which implies that all classes whose name ends in "Monitor" are loaded.

This last method is very simple, it just retrieves the MethodBase object from the stack in order to pass it to the monitor and finally invoke it. The assemblyLocation parameter is the one that specifies where the user defined Assembly is located.

```

-----#-----#-----#-----<START CODE>-----#-----#-----#-----
let dispatchCallback(assemblyLocation: String, argv: Object array) =
    if File.Exists(assemblyLocation) then
        let callingMethod =
            try
                // retrieve the calling method from the stack trace
                let stackTrace = new StackTrace()
                let frames = stackTrace.GetFrames()
                frames.[2].GetMethod()
            with _ -> null

        // invoke all the monitors, we use "convention over configuration"
        let bytes = File.ReadAllBytes(assemblyLocation)
        for t in Assembly.Load(bytes).GetTypes() do
            try
                if t.Name.EndsWith("Monitor") && not t.IsAbstract then
                    let monitorConstructor =
                        t.GetConstructor([|
                            typeof<MethodBase>;
                            typeof<Object array>|])
                    if monitorConstructor <> null then
                        monitorConstructor.Invoke([|callingMethod; argv|]) |> ignore
            with _ -> ()
-----#-----#-----#-----<END    CODE>-----#-----#-----#-----

```

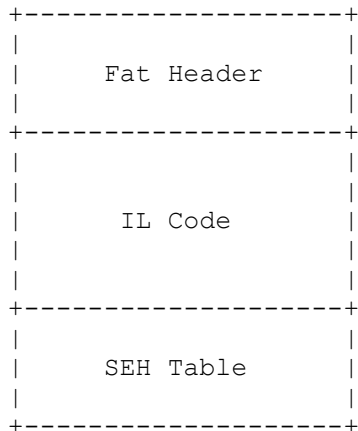
---[4.6 - Fixing the SEH table

We are near the end, we have modified the MSIL bytecode, we have created a dynamic method and a trampoline. The final step is to write back the CORINFO_METHOD_INFO structure and call the real compileMethod. Unfortunately by doing so you will soon receive a runtime error when you try to instrument a method that uses a try/catch clause.

This is due to the fact that the creation of the trampoline has made the SEH table invalid. This table contains information on the portions of code that are inside try/catch clauses. From [11] we can see that by adding

additional MSIL code, the properties TryOffset and HandlerOffset will assume an invalid value.

This table is located after the IL Code, as shown in the following diagram:



We also have a confirmation from the source code, in fact in corhlpr.cpp ([12]) we can see that the SEH table is added to the outBuff variable after that was already filled with the IL code.

So, to get the address of the SEH table it is enough to add to the IlCode pointer, located in the CorMethodInfo structure, the length of the MSIL code.

Before showing the code that does that we have to take into account that the SEH Table can be of two different types: FAT or SMALL. What changes is only the dimensions of its fields. So fixing this table it is just a matter of locating it and enumerating each clause to fix their values.

The following F# pseudo-code does exactly this:

```
-----#-----#-----#-----<START CODE>-----#-----#-----#-----
let fixEHClausesIfNecessary(
    methodInfo: CorMethodInfo,
    methodBase: MethodBase,
    additionalCodeLength: Int32) =
    let clauses = methodBase.GetMethodBody().ExceptionHandlingClauses
    if clauses.Count > 0 then
        // locate SEH table
        let codeSizeAligned =
            if (int32 methodInfo.IlCodeSize) % 4 = 0 then 0
            else 4 - (int32 methodInfo.IlCodeSize) % 4
        let mutable startEHClauses =
            methodInfo.IlCode +
            new IntPtr(int32 methodInfo.IlCodeSize + codeSizeAligned)

        let kind = Marshal.ReadByte(startEHClauses)
        // try to identify FAT header
        let isFat = (int32 kind && 0x40) <> 0

        // it is always plus 3 because even if it is small it is
        // padded with two bytes. See: Expert .NET 2.0 IL Assembler p. 296
        startEHClauses <- startEHClauses + new IntPtr(4)

        for i=0 to clauses.Count-1 do
            if isFat then
                let ehFatClausePointer =
                    box(startEHClauses.ToPointer())
                    :> nativeptr<CorILMethodSectEhFat>
                let mutable ehFatClause = NativePtr.read(ehFatClausePointer)

                // modify the offset value
                ehFatClause.HandlerOffset <-
```

```

        ehFatClause.HandlerOffset + uint32 additionalCodeLength
    ehFatClause.TryOffset <-
        ehFatClause.TryOffset + uint32 additionalCodeLength

    // write back the result
    let mutable oldProtection = uint32 0
    let memSize = Marshal.SizeOf(typeof<CorILMethodSectEhFat>)
    if not <| VirtualProtect(
        startEHClauses,
        uint32 memSize,
        Protection.PAGE_READWRITE,
        &oldProtection) then
        Environment.Exit(-1)

    let protection = Enum.Parse(
        typeof<Protection>,
        oldProtection.ToString()) :?> Protection
    NativePtr.write ehFatClausePointer ehFatClause

    // repristinate memory protection flags
    VirtualProtect(
        startEHClauses,
        uint32 memSize,
        protection,
        &oldProtection) |> ignore

    // go to next clause
    startEHClauses <- startEHClauses + new IntPtr(memSize)
else
    //... do same as above but for small size table
-----#-----#-----#-----<END CODE>-----#-----#-----#-----

```

Once we have fixed this table we can finally invoke the real compileMethod.

--[5 - Real world examples

The code presented is part of a project called Anathema that will allow you to easily instrument .NET programs. Let's try to use the framework by instrumenting a web application in order to steal the user passwords and to instrument a real world malware in order to log all method calls.

---[5.1 - Web application password stealer

Let's see how we can use this instrumentation method in order to implement a password stealer for a web application. For our demo we will use a very popular .NET web server called Suave ([13]). We will write the web application in F# and the password stealer as a C# console application, in this way we can instrument the interesting method before it is compiled. In the other case we have to force the .NET runtime to recompile the method in order to apply the instrumentation (see [14] for a possible approach).

The web application is very simple and contains only a form; its HTML code is shown below:

```

-----#-----#-----#-----<START CODE>-----#-----#-----#-----
<h1>== Secure Web Shop Login ==</h1>
<form method="POST" action="/login">
    <table>
        <tr>
            <td>Username:</td>
            <td><input type="text" name="username"></td>
        </tr>
        <tr>
            <td>Password:</td>
            <td><input type="password" name="password"></td>
        </tr>
    </table>

```

```

        <td></td>
        <td><input type="submit" name="Login"></td>
    </tr>
</table>
</form>
-----#-----#-----#-----<END    CODE>-----#-----#-----#-----

```

The F# code in charge for the authentication is the following:

```

-----#-----#-----#-----<START CODE>-----#-----#-----#-----
let private _accounts = [
    ("admin", BCrypt.HashPassword("admin"))
    ("guest", BCrypt.HashPassword("guest"))
]

let private authenticate(username: String, password: String) =
    _accounts
    |> List.exists(fun (user, hash) ->
        let usernameMatch = user.Equals(username, StringComparison.Ordinal)
        let passwordMatch = BCrypt.Verify(password, hash)
        usernameMatch && passwordMatch
    )

let private doLogin(ctx: HttpContext) =
    match (tryGetParameter(ctx, "username"), tryGetParameter(ctx, "password")) with
    | (Some username, Some password) when authenticate(username, password) ->
        OK "Authentication successfully executed!" ctx
    | _ -> OK "Wrong username/password combination" ctx
-----#-----#-----#-----<END    CODE>-----#-----#-----#-----

```

So, the best way to intercept passwords is the 'authenticate' method. We will start by creating a class in charge of printing the received password, this is done by creating the following simple class:

```

-----#-----#-----#-----<START CODE>-----#-----#-----#-----
class PasswordStealerMonitor
{
    public PasswordStealerMonitor(MethodBase m, object[] args)
    {
        Console.WriteLine(
            "[!] Username: '{0}', Password: '{1}'",
            args[0],
            args[1]);
    }
}
-----#-----#-----#-----<END    CODE>-----#-----#-----#-----

```

Now, the final step is to instrument the application, this is done using the following code:

```

-----#-----#-----#-----<START CODE>-----#-----#-----#-----
// create runtime
var runtime = new RuntimeDispatcher();
var hook = new Hook(runtime.CompileMethod);
var authenticateMethod = GetAuthenticateMethod();
runtime.AddFilter(
    typeof(PasswdStealerMonitor),
    "SecureWebShop.Program.authenticate");

// apply hook
var jitHook = new JitHook();
jitHook.InstallHook(hook);
jitHook.Start();

// start the real web application
SecureWebShop.Program.main(new String[] { });
-----#-----#-----#-----<END    CODE>-----#-----#-----#-----

```

Once the web application is run and we try to login, we will see the

following output in the console:

```
-- Secure Web Shop --  
Start web server on 127.0.0.1:8080  
[14:45:49 INF] Smooth! Suave listener started in 631.728 with binding 127.0.0.1:8080  
[!] Username: 's4tan', Password: 'wrong_password'  
[!] Username: 'admin', Password: 'admin'
```

---[5.2 - Malware inspection

Let's consider a sample of the Hawkeye malware, written in .NET, with the following MD5 hash: 130efba199b389ab71a374bf95be2304.

The sample contains two levels of packing. We could trace the packers but let's focus on the main payload (MD5: 97d74c20f5d148ed68e45dad0122d3b5). When the main payload is launched the following method calls are logged:

```
c:\>MLogger.exe malware.exe  
[+] Debugger.My.MyApplication.Main(Args: System.String[]) : System.Void  
[+] Debugger.My.MyProject..ctor()  
[...]  
[+] Debugger.My.MyProject.get_Application() : Debugger.My.MyApplication  
[+] Debugger.My.MyProject+ThreadSafeObjectProvider`1.get_GetInstance() : T  
[+] Debugger.My.MyApplication..ctor()  
[+] Debugger.My.MyProject+ThreadSafeObjectProvider`1.get_GetInstance() : T  
[+] Debugger.My.MyProject+MyForms..ctor()  
[+] Debugger.Debugger..ctor()  
[+] Debugger.Clipboard..ctor()  
[+] Debugger.Clipboard.add_Changed(obj: Debugger.Clipboard+ChangedEventHandler)  
    : System.Void  
[+] Debugger.My.Resources.Resources.get_CMemoryExecute() : System.Byte[]  
[+] Debugger.My.Resources.Resources.get_ResourceManager() :  
    System.Resources.ResourceManager  
[+] Debugger.Debugger.InitializeComponent() : System.Void  
[+] Debugger.Debugger.Decrypt(  
    encryptedBytes: System.String, secretKey: System.String) : System.String  
[+] Debugger.Debugger.getAlgorithm(secretKey: System.String) :  
    System.Security.Cryptography.RijndaelManaged  
[+] Debugger.Debugger.Decrypt(  
    encryptedBytes: System.String, secretKey: System.String) : System.String  
[+] Debugger.Debugger.getAlgorithm(secretKey: System.String) :  
    System.Security.Cryptography.RijndaelManaged  
[+] Debugger.Debugger.Decrypt(  
    encryptedBytes: System.String, secretKey: System.String) : System.String  
[+] Debugger.Debugger.getAlgorithm(secretKey: System.String) :  
    System.Security.Cryptography.RijndaelManaged  
[...]  
[+] Debugger.Debugger.IsConnectedToInternet() : System.Boolean  
[+] Debugger.Debugger.GetInternalIP() : System.String  
[+] Debugger.Debugger.GetExternalIP() : System.String  
[+] Debugger.Debugger.GetBetween(  
    Source: System.String, Before: System.String, After: System.String) : System.String  
[+] Debugger.Debugger.GetAntiVirus() : System.String  
[+] Debugger.Debugger.GetFirewall() : System.String  
[+] Debugger.Debugger.unHide() : System.Void  
[+] Debugger.My.MyProject+ThreadSafeObjectProvider`1.get_GetInstance() : T  
[+] Debugger.My.MyComputer..ctor()  
[+] Debugger.Debugger.unhidden(path: System.String) : System.Void  
[...]  
[+] Debugger.My.Resources.Resources.get_mailpv() : System.Byte[]  
[+] Debugger.My.Resources.Resources.get_ResourceManager() :  
    System.Resources.ResourceManager  
[+] Debugger.Debugger.HookKeyboard() : System.Void  
[+] Debugger.Clipboard.Install() : System.Void  
[+] Debugger.My.MyProject+ThreadSafeObjectProvider`1.get_GetInstance() : T  
[+] Debugger.My.MyComputer..ctor()  
[+] Debugger.Debugger.IsConnectedToInternet() : System.Boolean  
[+] Debugger.Debugger.IsConnectedToInternet() : System.Boolean
```

```
[+] Debugger.My.MyProject.get_Computer() :Debugger.My.MyComputer
[...]
```

--[6 - Conclusion

Instrumenting a .NET program via MSIL bytecode injection is a pretty useful technique that allows you to have full control of method invocation by using a high level .NET language.

As we have seen, doing so requires a lot of attention and knowledge of the internal workings of the CLR, but in the end the outcome is worth the trouble.

--[7 - References

```
[01] Metadata and Self-Describing Components - https://goo.gl/bbSG7p
[02] The .NET File Format - http://www.ntcore.com/files/dotnetformat.htm
[03] Standard ECMA-335 - https://goo.gl/J9kko6
[04] corjit.h - https://goo.gl/J68Poi
[05] corinfo.h - https://goo.gl/G31KHP
[06] OpCodes.Calli Field - https://goo.gl/D7ug93
[07] OpCodes.Ldftn Field - https://goo.gl/sHzz1S
[08] Expert .NET 2.0 IL Assembler - https://goo.gl/3LKLSW
[09] OpCodes.Ldc_I4 Field - https://goo.gl/qEW2Lx
[10] OpCodes.Call Field - https://goo.gl/29rqZk
[11] ExceptionHandlingClause Class - https://goo.gl/bjLqSv
[12] corhlpr.cpp - https://goo.gl/DDVKgH
[13] Suave web server - https://suave.io/
[14] .NET CLR Injection - https://goo.gl/nryxYB
```

--[8 - Source Code

```
begin 766 Anathema.zip
M4$!L#!!0`~~~~`'E8ADL`~~~~~)~~~~`06YA=&AE;6$04$!L#!!0`
M`~~`(`'E8ADM9G."55P,``(<1`~~`8`~~`06YA=&AE;6$006YA=&AE;6%3;&XN
M<VQNK9;+CM,P%(;75.H[5,,&)!SY&ML+%HX3PP+0B'+9=)-IW1)(ZU$N(`0\
M&0L>B5?`85)H6JB:M)LD/C[YSY<_B7U^?O\Q'CW/YH4KW;*:O,G*.LTGTZI>
M9&XR=7E=96XS,5EN'TV,*]:IS[%~V001#B<C^[OW83H>'07N0MLTQ_[F0`&
MF%$,`]04W63K>OV?5.A3*<1(-JG7A7MOY]6#JR]&)9`F&@("D0$(Q01$AD8`
M0@VIX3(QD?YV)='K7#UW\P_/LILB+3Y?/>H,9SO7P;R\]>I-QA?*96@2KH$1
M,0,4Q2$0TC`@#%8"1Z%DL1<?CY+-HB4:B/;*EI6O^/L\;PZ(%))`KC`G@'&.
M`~VI!D*%"4B(#CF'1F@F_T_A43DR,@(L)L3?S110'&(@,8PYQUQR$;84R310
MF[1Z9]=I\_-2Y#[[Z06RV'PB6?TECS$(8$06XB"-!:=`1A(!R37CS,0P1/CB
MI-0S5UE<_B,WV`[ND$<&:ADH`$D7^S4(D@"0R!H((33@)I8K"BY.^K#=5MKZ#
M/O$/#F,=9*3B))2"@)`;Z8L:"I0FGMLPC@734,?(A_C\V=NM;*+[J]G+7G
MW:~280X)]6\8,Y$`RG4,E((08!A"[$W$V(B+.#BU\[_JP;^W-])V[]:6[@5EG
MM.N7_V>QQC0&AB-?`G,&I,8QB)0@S/_8R/_"%_&K0W"=EN4G5RRFE4WSQL3C
M\[_3W;M1@FBQD.!4%/5V*U)`@$ (2,1A[$1B+' ]IWF2NYLT'X_NW5WX4LW:
M_6"[B&NW66:KNDB;P76>5DN_G)?-( )T6=IOD[[X7VYMZ]55M/D_T]6L_W1DW
M"2]M;M/2[J1L(W^3/%@'XP"KQ3Y"Y<IJ%~NTY3GHT`;*%_MH]7*U_QR#%:,Z
MRQ<!/$/OKUF'C.W<!51;SG]KGK;)]/)RB&++>(9>7R^'J1[U\K1ML)>70Q1;
MQC/T^GHIY3/6HEZ=MU+V`'+8,IZAU]?+8:I'O3RM@^CEY1#%EO$,O;Y>#E,]
MZN5I[4\O+X<HMHQGGZ/7U<ICJ42]/Z]1Z>3E$!64\0Z^OE\_-4CWIY6I_8R\LA
MBBWC&7I]O1RFVG(.:UBWO:AO7&]M467V7[WSTVSQ9_S"+:S/,.K9-/EG@3^1
M\>@74$!L#!!0`~~~~`'E8ADL`~~~~~:~~~~`06YA=&AE;6$015,N
M06YA=&AE;6$N0V]R92]02P,$%`~~~~`@`>5B&2YJ-?$:7`@`~]04`~"D`~!!
M;F%T:&5M82]%4RY!;F%T:&5M82Y#;W)E+T$S<V5M8FQY26YF;RYF<Y54VW[3
M0!!]K]1_&.6%M"~N):5-*X144JCR4$!-J800#^OU.-YVO6OM)<6?Q#?P@,0/
M\00,;IS8#;V(1++W<N; ,F90_/RE6(FV8ASAW30Y5<P56+)DK`TFI]9BF<IZ
MHG*]N;&YH2M4,*VMP$*YQ%PB=T*KM7.OG"B1",I*2#13-'/!T3Z,FBB'1E=+
M4'"RLP/GJ-`P"<&O*5EP`BS5W@&C12,*A`6NE3-:2LS`%4;[64%OA)R.])U0
M,XAT%AWH')AS1J3>H4U@7#`UPP"VV%[_G$F/%IR&4F<BKR.;;%4$NB!`<\$<
M.;T3KNAJ2C8WOKY>;DY@F;\KX23V>^OY[6V]^?:PP1E.;D057/9[C\/&6N5B
MY@U['EA63-5/03X9G7GN_D?E6%>U$;. "C%9+^/T#8']W[^AQLRO#,B(WMT\J
M]M)Y@TM(3/P4G0M%I6BNA16IQ%"IG$FJ8<EN0^$*.JHK6@E%&V';;E':P;RQ
M"FS!=/SQ`CBE1BM4CKH")CG4VH-"S,( ]X]23Q!$Y_Z7,C2XC5R!Z&=HL"FCE
```


MM9T5V) SQ" #J0, !<9U [JEM>O' F-K' K [U] /GGR5EH?NK*Z [J.V.E%+D4* (E\H MK8R^H1D-8/Q>: 8M9\$ _5] Q^=>9/U>.MSG!X=L-!BFZ:O!P>[>:!'`\/,X&H^&(M#X^&A<L/>P4XQJ-I: [K3D=0U) V&,) Y66<;?6T,M/*FF;:32!<?B] \%NR&> MAK] [+E1 [WC5XZX7,X(,O4S2=XTN<BQ5%'RAVG(2:"OD8;J9E*1K-?;\$7C>(M#'-&'1AN% _045 [9B;'S9!6M:@[<45`2_V'Y!\8,M]) V%"%G<17P/] 7@32K^W ME^PFVXO</HNC _^/ (_3%74<O:Y;1) SRDI; _U%U!+`P04` `` `` ``!Y6 (9+@LO (M<W\$ \$ ``!&#@ ``,0 `` ``\$%N871H96UA+T53+D%N871H96UA+D-O<F4O15,N06YA M=&AE;6\$N0V] R92YF<W!R;VJU5\URTS`0OC/#.PC#3,A,8R=-*04<,R4MI0.% M3! -`#K [(] KH1V)) 'DD/#!&8<>"1>@?5OG*0!=I#) N/=U>ZW^ZVTTJ\?/^WG MEW%\$9B`5\$WQ@], RN08# [(F#`8F"D.NP<,&=NW?LD12?P==D (D2D/M3V>] F" M (PAI&ND) E1>@U<!XD; (H,`AZYO@UU3IY:EG*GT), E1DS7PHE0FWZ (K8"F\$ \$D M\$ I!6K+QLF;7; [?8-C\$B (?1HG0FI2AAX8#QZ>C7/?QY<:>(9`C:B>MMU:T43 M=L _J4\$,1QX*;B12), LA0\ (#I/ ('C2Z:T>MBZ&=>MMD&L`OM (9EGI^8D4:9*+ M4 (B!0W:12IH%;\ (@`&!) V6Z1P8" T6L1PCL!++VQK25TY'\$54AT+&J [XJ></ M (9\1^] MJU) 5+L8Y+V5BSJ [9M:TE4657LG" 2LL#Q^KO^WCX] Z/0] [U%GK] L [MZ#SI/PDZ! _T#O _^XO _^\$>OL8:; &B<O (NU4FJ) _,\$G#?,DU3.;6LAJZS.A=!O M:0PJH3XXQV\SD%._=0<) B2 ["MIKY>=*@4Q%XT1\55:QKJ>DG1L"\EBKX*^:5* M>+9G [IN [MG6U>F7Q>\$IEDH6HU' LF [HFLBAL,:KRI%B?` `0F%\$XQG&^X<`B:Q M8LK1,D7,VTPJ-QO2W9 (FTA*R"*I&M98 [=;UYM`?I] [5FR_OU>] %NV'\@5BEP\ MGL>>B*K\FJ (EL [P9C2*2IMF<[+- (O9-) 332* &3ZGN1+8M\&J' 'TJ`6+#+=A MMKT=CW\$WC`"BHUJ'P! (R#IBOTI1CR8`7.P [_>38Y/QP>V] :*LEKSD4J./+W) MCK6G;UO< [] JO\-,8N,XK^! *Y:..!8I+=\=/8&@ZVNN"7NSB\$ "JF#!WCHM2>) M'LVW,). QNXV83'\-7DHLUV+FMC@I,?P_*Z<:XJ51<`XA2) RT0\$ZY'Z4!# (Q8 M^4) &S,_,9LL6J.%!R%#ND&L0/'FXX;=H [9 (BC.94PX)!J2:,,=,DJ] B/FO83X1 M7X`/O&X`?!0^#GN] X%&7] FG%>=Y+; (9GCS/) "2N_*FQ6#6X+VO%<8>:8T1] M M\HRN9?@6BRZ9KXSZ",NJNZW8.*,3%C4\5=/@E (?`##-/@TU?`0VPEG^P>HL] M, (/,:!W4E@Q!&,>,L3N,/3*4T&NLT8* (DKKES<>-N-JQ&O.'T>K:UV6YS;PZG M0JB:Q [] 36`V^_.6H/+XRMJF%6D_R>+U9_M^V:YN) 61<9'KY7 [\K [;- [MN/;G< M&8 [6QM6KW`KEO;/5+H"44`IEJ<O/CEN;_5MKX6HLZS4OI%FAZZ,/CQ;YE2FX MF5+6,-TF=> [L:BK=`ONM%/9FD?Q+F9NES;Z+;M_TP%CSO [C1W^MT\5#8GP; MA7,R%ZDD^8N%X-7?!Z5V""V"0JZI4D (85B ('CC^0H (H4R [] 1X^>;X2R@.2 M<GP\$92.%,&V2NL@Y9J) P?#94\$BJ2A+!.*Z'K'-VB' (@:^^0,H:90R [R (-EE M\$Q%) E\$. () 6 [S-REH4?F?]=C#4 (#>9=CKX5U_OG=] 02P,\$% `` `` `` @`>5B&2YIA M,3?!\!@``UQ8``"0`` ``!!;F%T:&5M82]%4RY!;F%T:&5M82Y#;W) E+TAE861E M<G,N9G.] 6-V.DT`4OC?Q'29ZXR;NVK*KKALUH73:HBP0H.M?3#-MIUT4F`I# MM<8W\`) '\A4\,T!;V\$) K_.G-LN= \?'/^Y [0 _O ^ (2\$B3!9E0A-T3-2+\FH;D M1&,QO7WK;L0^DSA"=Y [<N7WK] BVVH!%R5PFG8>F? \$R>-N! _2\$SWB-&8+E\9+ M?T (3\<Z [IVK*F07@Y^] OWPK9-`TH&E`RI7&"GMV^A>##5PN* [] AQ.N\$^B] `S ME'] `G7^^ (5OMXY%IJ9J&71<@K2^M] @V] @] 6N91IO,KVR4_*T3V<`<YN`*12 ML^R<X?P&`+ _VC! _O] VJ46<'28S2C-D8<U8'K!IU?A/8'ZI.-S>IM2-HFJH-M<&Y.J\ [GRXYNYJ8 (T%9JH!A>^+P7D#EZMOVV9CDO=&_4, _HCU\ :X. [] L+XM; M] FG7@?6WN (I5:K!=W!GV1YK5Q=OH,_3@`9K3B,`4\$W1G2L?I? \$ [&`V#) FQ* MT;V (R8?CD\$3SP (_FB"V@0VOV1!18<M1X& (ZT [;/.Q5FO*" (Q17Z\$-\3GQ] &Q MQJ#DHY2B\$ (YII-/-GK7%0U0Z1?`@C#J:HH!-2'") #&<,F,U,C (9EN: (N-&Q M (\OI8F>+61',P,2BNB7"5W (9F (QM% H-G:<Z?>R-; &QZ^O!R0P55M.<-V] GR M2=D+ /] N`S _!:!.ZJIJ^ [FA?/:%X80BQX4KB [!N>\$R"/T\O-.L'\$*R0BE\$939A MH7] O<00A3GB<RFG3P*U=6E=K:J69>A*RY8&TKHN5->U9,RU@CY5MWJ2&!!+2 M&VFJ83AXW5?M5D [^*B8+%) ^S8">!\$%"/OO\&BUB-J:-A%`8V#&P>K7N/J7@ MU*5- (8VXX`G8/*7) ` [KPQ5,SJ6 ["'VVD:IY^A:);`=KJH>S`9:'9)/R ["PX M`BZ4!&6+=AJ:0#BE6%,7T4^K'%#3^;\$9C88Z_MDQV>Y,IIC6R=?/*>HG!*J.8 M?Z+H"C> [?@) S! ?AM/5JRCV (\$0,N" `76S [:5NCZ3PH _=T<\$JWS) RQW;KAU;V` M?%T=H>2COT!+&OLS?R (-1L?@) ERD (8R&J<P42SF:,_NDUFJ5!@,!A%BSI"7 (I M15#4,@UC&K#/M=YB>,QM45J%=Q] \#@,"\$DC%DY\@?BUF!YVDTA` :S<&&DQI. M!QM6-BEESBJ#:#:*D<9%] &1-U [#HE [;E>+/-K=TZ7W-94;!"?KA@,1>6@>] 1 M4W/IQLCUAIU`.6@5-'GE" = (A'0#) 3P=UU>%YMI&2IE0R+`ET`F@BEA*Z (*MB] (M41"<H6O&Q10'B=0WMFH+EK7R?P>WV>8\$C04!O (G) /\$G: \$S1\$R*:`8' M5-X)<2C+HY9U? :.;SBM [-JC>0P\$-] 04BWZ#N.>HE [C8+C;,:A#DI`FZ) DLJ M8HL [-IK%) *S+M6KH?5-<8G8VWY4M/C*= (M.R\$RACL (B*>VR1 ('@M"?QY) - (? M (L) 1^Q\$:KR#T8Y9&4Q+ [] :-FV#%T=S!RL>: (*T@%-XKMIMR+17;#- (%9L`J M+"M\$ I#&F (" '@D<QR=D>CU@E"] U* ((UA2E%-R5-V8=`BL!K,6%H5E96T",TJK M41?WU*\$AD [<MQJ^A\$#7= \P:Z"->CTK;:4UU/C'M0E.4Z-KH"O2WL8Q,FDCRW M)! `249^6MJ _#`NH84WK@^;QMN) 2=5*EH?;0E,5@_P*`NSTA;+DFXR [] \; & M0J.4] VG'LK'CB;8OR5VOFFWM6,DI8FLM/M^7K@Q_N2H\$'S^7P=RQ+<J>KDO2-M@WO"QO.J7. [G9V6I-E`=84=%:JCRJXG2JLBMH>D)>0?M:!!&L8QG6=\$S+-43 M\LJQNJ3)+=PDRY1AAT-O9B5 [HZWLT@US9<4J6XZF] N.R%**CFF^\$ \$^VRPAW` M^!8%5Q% [CI [955\$,\XA67,Z->5*1LZU*W*S* [/5JH@+8RK&7ZG&?`?9:3^I M*AWAEW*16KIH (WEN) G_WU) 5+V/`WY?/-LH+ [^5 (VYZ4?34] <VYG&009) <) 2! M-R4IQJWKS`7R!.R;`Y`D@/F3799:0)) \$ (#28<?P"0A/Q4Z49" [" (B (5HP>.G M@+=Y' SW&Y<PLP\`D%] "] W/\B.#-6YQBI%Y49^QNN\$.YF`R3!<H, [X1"><?

M#K[8GC*[D>);,Y!U5KP&8*:A&@-\$9J+]:#<H+YF+2@GM!@/'O,]6&2C(O>U
M)S9SN!/X!:B_(URN(]L,ODH>NY&85S*/:.Q+C+(`':P8&U5#5+^!G4(4H?"
MFAZ\$<6'%VM-+Y(O+P;_F/..!;,M&4%%SUD(NF<6Q#;50Z:W=2\$/L-C>P?S+\
M&A*J&UF^7-AW\;4;0@^C9PT-U!P0+UY9LUE"^5Z8`=]H^'53.V9U\$1_"ET/W
M<^J!4NJY_Q+6'N\$'!/54.2BHI\K>H&:P@^-ZJAP4UKVWXXYA]@M02P,\$%``
M`@`>5B&2X`:`R!>`0``<P(``,``,`!;!F%T:&5M82]%4RY!;F%T:&5M82Y#
M;W)E+TYA=&EV92YF<W52S4["0!"^D`\$. \$P\&3.T!KD""!1*,8F.#%^-ATYV6
MU>ENLYV`^&H>?"1?P>T/HB'L:>;;F6^^^7:_[^TR+#(18PPC_RI%KS!3/B!
ML=CM=#LF1PW1OF#,_B7^8ZE99>@O-;,U>81VJV(LJI[,R)(05H+5%F'<[8`
MSZ,9T3++C>7>14#V5;\$OB2X\``21TFE@]!8=I]\$P/L7\B&4%>A!:+-PPC%3J
M"MF6V)^-#/PW6G1X"2%;"%OE7<ZSM)IPK>7""2<-!JB)#O1,%S:XT]PWIC
M#*`0`*0LEX)":QAC[K7#*])*Z905'JP=-!R`W\$7J`SUH"NN]\$EKAKLT/=9>N
M-:\$'DBW^1^Y:9T*+%.6BU#5!:%3E=N^L.^<6J?@:5M[G(')<D5XC[PQ<H8Q
M"2M:XR42IH(13'+P\>H8Z/I)<[8C]S^:]J5.S,1=."<"YO2"1_C8<@^L)U,M6
MN_T`4\$L#!!0````````E8ADL``````````:````06YA=&AE;6\$O15,N
M06YA=&AE;6\$N2&]O:R]02P,\$%``````@`>5B&2QSE15Z9`@``]04``"D``!!
M;F%T:&5M82]%4RY!;F%T:&5M82Y(;V]K+T%S<V5M8FQY26YF;RYF<Y54VT[;
M0!!]1^ (?1GDAH,8D%`B@JA(-+<T#;44H4E7U86V/XX7UCK674']2OZ\$/E?I#
M_87..DX<4BYJ(ME[.7/FS,U_?O[2HD!;B@3A[20ZU<+E6(CH/=%M=&HM%K&J
MQCJCS8W-#2I1PZ2R#HOH\$C.%B9.DU\Z]=K+`:\$1%*16:"9J93-`^C!IKAX;*
M!2@XV=V%<]1HA(+@UQ0B.`\$1DW<@>-&(`FDA(>T,*84IN-R0G^;\1LCXB.ZD
MGD)-9]\$!92"<,S+V#FT\$HUSH*0:PQ?8"9D)YM.`("DIE5M5LLE41Z((`2J1P
M[/1.NGQ54[2Y\?758G,"B_Q=2:>PVUG/;V?[];>'#<[0]D:6P66W\SAL1#J3
M4V_\$\`"B%+IZ"O+)4.H3]S_J1U161DYS-EHNNX?</@+W^8/BXV941*9.;VR<5
M>^6\P06D3OP\$G0M%Y6BNI96QPE"I3"BN82%N0^%R/JI*7DG-&VG;;M'D8-98
M!;9@.OIX`0FGAC1JQUT!XPPJ\J`1TW`O\$NY)YJ@Y_Z7,#!4U5R!Z\$=JL%M#*
M:SLKL#GC\$2B0"%<SKG5+:]>M8VH#O[K7T^>?QV>A^;DK:W^HVP9NI(QR&RN
MM#1TPS,:P/B)) (MIS_5]Q^=>IMU.NG=PV()?BM[P*(U[^T?#_=YQ?#SH'0^3
M@%!EO8/!WLKQ;A&8[GK5J<C*%J=AC">5EIG&WUM#+SRIIFVDYJN?LQ_%^&
M>1K^U7.IV_-5@S=>JA0^^")&LW)\B3.YI*@?7[BV"0NT)29ANH52K&LY]LQ>
M-8@4,\\$=&&[G]!Q7NF1L?-DY:UR!MQQ4#=[:V>+XP>9TIR%&#G<>WT,]WH32
M[0RB?K0SS^VS./X_CGS'7]QU]*)F*7_"0UJZVW\!4\$L#!!0````(`'E8ADMY
M:F])M00``"P/````Q````06YA=&AE;6\$O15,N06YA=&AE;6\$N2&]O:R]%4RY!
M;F%T:&5M82Y(;V]K+F9S<')O:K57VW+3,!!]9X9_\$(:9D)G:3NHT%W#,E%#N
MA4P3+@]YD6VY\$;4ECR0'PN7+>."3^~76USA)<X\JE#YF,=>[9_>L5]+/[S_L
M!Y^B\$"V(D)2SH=8V6AHBS.,^9>=#+5&!WM<>.#=OV&/!/Q!/H2GGH7Q;V7?2
M#8](@)-03;\$X)TH.M8<)#7T-@6<&J[E2\3W3E-Z<1%@:\$?4\$ESQ0AL<CTR<+
M\$O*8"#.2;KK-/&RU+`TB(F0_BV(N%"I"#[4[=T\GF>^33XJP%(\$<8S5OSBI%
M'5US=EJ%&O\$HXLRL(!^EAD:<^51E"9Q\HE+)NXW_X[K1U)"98Q^+-"NU?")X
M\$F<B\$+\$@@)XG`J?ZS`0`%A3-AMH.\$2-!M*<1\1-SFUS35TZ' (=8!5Q\$F[Y*
M><W-,5N.QF]LLU25+B89+T5BSJ'1LLTU46E7L/\`DH;[C'QYU6ZZ%]5[?=_5.
MO]?1!^Z@K0]ZWE'O*/!;W?8A1%KM*)V\3E2<J.DR)LY+Z@HLEK:YDI569YRK
M5S@B,L8><4XFQC`#*H5D/.7\PC;K^FK3L90D<L,E*" [;4U-76_*&?2Q`])&+
MBS+A1<?H&H#_<O7&YLD<BWC\$!2G5'0.^B;2*.PPJO(GB3P@C0"AY2%GZP9T1
MGPJHF'242(AM[C,IW>Q(=T^:0\$M`0U(VJKG>J=O-N[]/OVXU6]:07_-V@`8K
M463BR3)R>5CF5Q>MF67-\$"1A6-C4F^~UK&A\$/X,>AQ*<E.M5MC3T<`@>"X-*
ML-Z\$Z>?MN)3-L@Y@S<2)5U@"R@CD*Q5F4/)')P_?/+D_/3L>G=CFAK+<\PX+
M!CR]3.>:8]EF?5WYY5X2\$=:R"CX&+FHX-JDTWI^^^A";.ZZ)NS,2\$BS)BKUM
M6F+?Y2Q<[F\$F97<?, :G^"KP46*[(\$S'5Q4F#X=U:>*1*M'05G)"`"3EJ"GC\$O
M3'PRU"+I<1%2%\Z0/5;Y0#`2B7*`RH/XSMT=TZ9Y@9P->"#!E)E,#A`1HG
M;DB]%V0YY1>\$#=#V6%1P%O:#=]H]:V,(EYUDOT07,'F>:\$5:L2FQF!6X/VLE2
M0N:0T6]MLHRN9/@`BBZH)[5JA*75W5=L.*-C&M8\E:?! ,Q9P(T@][31]3E7&
M>/`'\8J3[Y(4#*/>2UG.6P((%8.#G(?5D-\T6QORJZ#.%)<Z]#I=W-<MUSW2
M.ZUV7Q]8`U_O6WW/ZEG=`7:[WZKC^:IL;^:T68H]UY9Y3RFB41&^I3`^X48E/
M>=&>]?D\$XVF7X>H^I#GMMFWNMMO)!8[FG,LJG7=SLAE\=]0V7(L;)1V;2? [!
M;=(Z; ,X,8W5W1)-'+^3L\>V99;1FU?D\6W1@N;I@%A]\<;MN-',@!91<6>BR
M"7F-L6US*UR%9;OFN30M=#7@H7G%1RK)_REE!7-6IVZVN)S*68[]6@K[?Y'\
M39GKI4W7>;?O>D9M^5^]6V[I.KSQ4`0OP&")ECP1*'N7(1A)'I'R`&'?S^4*
MRPMB\$H1(^09S!+T""`L296^3"P^XCPLQ'"8.G7GI0(JH,5!4YPXP7!)")!`I
MJXIB3AGL)VD'""!)"-IZ;14QC`QRG@=*IR&\4D`LS%_@1:UR/7.MNUQH(C8
M9:KK\>:DK\`4\$L#!!0````(`'E8ADO[I62^""0``+H.````D````06YA=&AE
M;6\$O15,N06YA=&AE;6\$N2&]O:R]*:71(;V]K+F9S[5?;CM,P\$'U'XA]&^X`2
M%,+MK2Q%7%VB\$NU+1<)(>1-)JU%8D>.6UC4/^.!3^(7&"=.<Q<+`B0DHM4F
MM6?&9[\,G+3?OGP5+,4\8R%"L/3O"Z8WF#+_1,H/ER]=OB0S%+`SS6FK0_
M*^<8)AII+T5G?"LU3].="HY+9\$M6.AY@/&SV4:<835!VK9SQ4,I>Q]F?+#5.9
M_YQIOD,;LC1JHJ4X"OT39!&J?&3;QC`YZ?, ,P20(=R'""!-=,(\@8+)IGJ#<R
M>H1APA0S"<)5H*,76C4?1!\$NT^J8HI<N<Q'+*6W1PA.N9PE;#WA>FYJGV<.
M0,C48'%<8#GH#<\)E;DN7S+_\$]20;C4[2Q#>;\@.HQ; ,29F(S`Q0\GPN!0YX
M*F1)RP\FH^G^,%C6\B0[@1]M>HY[^5+M,8`7'),B64ZLAPM.6/!EV&LLI@=*

MC?\$HW609\$]'YI,\$ZK97F@=#JO(IY6%WRS_@B?B@C/&P5E%>LVRME.MP,<@X?
MN=[4AGM8RA2+9*FZQ9VZ?T=N3I]W_Q5+MNB!9<&#.GD/ZIR+K2(Q#QJY5!_J
M%-P&CJ)>!L+8L16LWWCXH=B#3#VRTU7VR&C'.0.NA]B1+._5.=FK%;6A";E&
M3>B=FB)>:QY?@V=,Y1N6^*>D#K9';02W7>_KUR\$LG2T5>5DE,']I)I5F0@.G
M\5`D,Z`EL)WD\$:W\$7'#*,9\$RZS;1VZ.YR#5+\$C.E1W?@:*EE9NX#&1^]:]1R
M"D]YKGV*JYQX*RRDYRPU!:[M#K,)=PNP_F/4*U(5QS5/95RG)O4`'G`1<;&>
MF?+ZB^U9PD/8[_?M]0*T"+&_ORU6.KEM\$%;13S#)4%%@A1E36`'PRX<3)J*D
MV;)N]6"+36FF9ZC*5)::*:HNW*WM>3S4V_.\:'S2>F%-ZY*F[`\.:J%*=PT?%
M"P6K;K2)I-HH:3&T`K@EANIAAO6HT8AI(;C/;SB2F]98GV<3OMYE7_9=[X9
M'`_J`_S%_<?!^!-!-\/#E*GA_&MQ_)/ITO@H\N-+"X5:9=:'Y`[+B2(D6A_>`3
M#<*UFVX_M:R1#[EL4W]!\$X&.>??(^+@^9NJUT_=7<JD5%=YQ79C<F];`.UAZ
MG.=L1U0JON:")9VA:AF7Q>R.;"FGCAU<T\>5C,RDFFU`6\$AN3"ST1_O;A5<
M#VRN8_(S+?;,V[Y0IUN(XY+_DU'&Q=1\$ZE'.2Y6!L,6E"3)<I8JVUS02.,R;
M!XT*=&BG0EP,:B/K'F9*69'&49/HPXC6W5J^@`:=?VGLZLB)^3)JR]>"OB0.
MR5!#P(OW5/F-JY"E"Q;3>#6(L(0-M[W9JTW[:],S[XV*:2.'^:~+?U,0NSP6W
M"&<L`!'00ZN"?VX8Q]2'6/@W!O#'KX?R5\EW4\$!#!0`~~~~`'E8ADL`~~~~
M`~~~~`~~~~`>~~~~06YA=&AE;6\$O15,N06YA=&AE;6\$N36]N:71O<G,O4\$!#
M!`0`~~~~`('E8ADN5I+7:FP(`~~`\$&`~~`M`~~`06YA=&AE;6\$O15,N06YA=&AE
M;6\$N36]N:71O<G,O07-S96UB;'E);F9O+F9SE51+;MLP\$-T'R!T&WL0):L6N
MC?Q0%\$B=-O`B;1&G`8JB"XH:6DPH4N#`J8[4,W11H!?J%3J49<M)G02Q`8D<
MOGGSAC.CO[]^:U:@*QE">#]-3C7S.18LN3!:>F-=<NH<%JFJ)EJ8[:WM+5.B
MAFGE(!;))0J%W\$NC"!B#]K+`9&R*4BJT4[1SR=<M1DVT1VO*)2@&V=^`<]1H
MF8(8UQ8L!@&6FN"!T:(1!=(!-)I;HQ1FX"-KPBRG-X(@D[F3>@8UG4,/1@#S
MWLHT>'0)C'.F9QC!#ML#F#,5T(\$W4)A,BJIFDZV*2!<%&"Z9IZ!WTN?KFI+M
MK6]OEIL36-[?E?0*NYU-=]S9?~M]L],9.FYE&<-V.X_#QD8+.0N6/0\L2J:K
MIR"?K<D"]R]5.C9E9>4L)\`?5\$O[\!'C='QP^[G9E648![.V3JH/RP>(24A=@
MBM['XE)&U]+)5&&LF&"*:EFPVUC`G\$Q522NI:2-=VS7:>.)@W7I\$MNHX_70"G
MZS\$:M:?N@ (F`R@30B%D\9YQZDSAJSO\IA35%\$S16)7L5VJP6T\MH.BVS>!@03
M29BO&1]T3>O7K7-J\$[^ZU]OG7R9G<0BH.^MXM#-BE;J2*4BQ4\$I:<T.S&L'X
MHS0.LR;K^X'/@\RZ'8'"(RZ&H)XQ.\>+Z(#S'NNGH)[!H#\`.A2#X?'!<*T8
MUV@===[ZE\$1%ZU,1Q]1)YUVCK\V!5L\$V4W=2T]6/Q>^"W1!/P[]NE[JKUSN\
M"U)E\#\$4*=HU\R7.Y8JB?GREVG(2Z\$KD<<J94J1K-?[\$7C6(#`6C#HRG"WK*
M*ULQ-K'<@C6M(#A*J@;O[.U0_N!R<Z<A14IWD=^F'F]2Z78&23_96]SMLSCZ
M/X[\0%>A^AES3+ZE,=KZ>[^`U!+`P04`~~~~`"!Y6(9+`_.Z-?\$\$`~~`8\$`~~`
M.0`~~`\$%N871H96UA+T53+D%N871H96UA+DUO;FET;W)S+T53+D%N871H96UA
M+DUO;FET;W)S+F9S<')O:M5726_30!2^(_\$?!H,4(A\$[:4(7<(Q*6TH%A:H)
MR\&7B?W<#-@SULRX\$)9?QH&?Q%_@>7?B)BRB!PY1Y+<OW[QY\^/;=_O1QR@D
MER`5\$WQL#,R^08![PF?`8FPD.NCM&H^<FS?L,RG>@:?)5(A0O:[D[Z<*AQ#0
M)-13*B]`_J['Q.&&A;Q"TS/%KKG7\p+*4-X>(*C-BGA1*!-KT1&3Y<`FAB\$%:
MD9JE:M96OS\TT",A]DD4"ZE)X7ILW+E[.LEL'WW4P-, (U!G5\ZY;,9K1==W3
MRM6!B"+!S5B*6!GD0'"?Z2R!HX],:76W\V],=[H&L?+8SV2:E5X<2Y'\$&0F)
MZ#A@%XFDJ?-F&`0#6&)V.V0\)IT.,9Q#F"47MK7\$+@V>A50'0D:KMDIZP\p^
M7QR<O;*MDE6:F&1]*1)SMLR^;2V12KFB"<)\YT`]D9>,!SU]N@N]\$;;GM>C
M`=FHMSWH#W=W@L%P;WN(GFJ-TLC+1,>)GBYB<)ZSF:1R85LUK90Z%T*_H!&H
MF'K@' \$W,?4YU&I)Y*CC30BK;:LI4BOM*030+%\A8I]<0J=1RX#Z12/H@Y/LR
M\<N1>=<LJVKV2O*DSF5\&04+) 'YL@<I-5<(U#%G&AQ#!RPL?"8\?3@G8//
M)%9..5HF8%N;1\$HS&U*N4K6M952V@;H9DU]:P,JP^26'%H*L#"8C3Q;13(1E
M#DW2DEC6^`~)PT*F"827L681^X1\&BHT4G[7M6>A1T.T6`A4A&7`I4?9F3'N
MKF;DHLU*H@XK8]Q04&G*L<*1X]?`'3^<GN'?`-G6"K/4>4,EQ[8\3>9@]AO
M?E=VA9=\$P'7F^@D+X<J0D-#\$:-=>_H<W:[H7E=#SR\$J\$J!N;:M7L3\3/%QL
M:?:\DW=2OG7U:S_LTVE[U/&691\$KYE*:#C1B<]\$,2Z:C<0^KA.L;P[#&0QL
M:[W<^L@.YD(HJ\$HVAU7GZ[T.<.)U2LRL)OD']^YPJ^N:9GW+DLGA,^4^N>T.
MS;Y;36(7)W2_<17G,]8L]I!.-P^D""5G%KP,0=?HV[9:[JI8VC7/J6FAJY.`
M,UQ^8`K^32FK,-UFZ]S+JUOIYK%?2V'_;21_4^9F:=/O'.WK%LZ6_7K#.]\$0
MK6QW48Q'GIQP+TQ\&!OE@#CA@3`#E6K6BR!61M>BN,6\IQ>@3"^;K5HV^HI
MZ+GPB^L]-UND4D6T)L!S"\$#B=M\p%BE/R)#-T,@&J:+JZ?:2M[Y>.1JLQJ:Q
MM(VMIE^>MF7W&6=IXSK90QA,R[PT*7#5*4(JL,K+#!0-4!*Q)@OCJ8K9_7.
MW36;6-=M!5>&4:&F\KJA2I.%PHIC)7\IDWGZ+<\$7>)U(YJG?\$GY-PP2F21PV
MNU2E@C.M1)G;4L!E-1UOB`27@TXO39]*'Z=Y2_3W*O1K,!:'[(IL,-#F(GN>
M<-PCX"H:HC]&,ZN8;&LN8[/V[GP>4!^V]W:'O>V=8^`^,L&H1[WA;F\ON+^S
MM7O?ZWO^SM?J+=,TP"YQ'7>FV2I3?!7L2OP7-;G5Z^%[FD3XV@X69"\$22;(W
M,,&D/%#J'J^G],U5>)\)PUGJ`Q\$<?P'!_) "<#28RPT?T!X)-(PGW\&:SA:F
M35*-Z6SJ\$87[6\$@E@7(NDU@PCOJ0WB'WB`(@K9=MX</,0LZ/\$\$F+B>)\`!#'
M^6N_R#G.VW9_4"#7"? :Z^%?7>2?4\$!#!0`~~~~`('E8ADNPY%(\X0`~~(0!
M`~~`N`~~`06YA=&AE;6\$O15,N06YA=&AE;6\$N36]N:71O<G,O365T:&]D36]N
M:71O<BYF<X6/P4K#0!"&[X&\PZ2G!&4?(*A0M2AH#32"%R]K.FE7-C-A=SWD
MV3SX2+Y"9)/2DDO[[V\$8^.`_O_W__2/=H>]U@["HU9QTV&*GU9+)!`8^3=*\$
M>R2H!Q^PFRQJA:W%)A@FL<D+0X]PKST>KO-&6VMHL\2PY74)^QD-UZ#<QI=0
M?7U+@`Q.#P7<I@F(UBSS(-/)"`1N[H!^K`7!I&@ [Z8')LT7UX4S`5T.8S[(L

M@^>J>ED\EC"#JVf4>I.?.%Y' [5#9BG>EHV44+&!J=1]0+')\!YJNGD2'>J7>N
M@Q.OO) #'5!+`P04`''`"!Y6(9+)]#53B'X`''`"1`''`+0`''`\$%N871H96UA
M+T53+D#N871H96UA+DUO;FET;W)S+W!A8VMA9V5S+F-O;F9I9T7,.0[",!`
MT1Z).XRFQV\$)\$D5,.BX`HK>2P;+B);++&>CX\$A<`5(DZ?YOWO?)J>JGLW"G
MF\$SP\$C=BC4""^:WQ6F+FV^J`]7&YJ'K5=\$I3^C?`>&! :B>=78G+BJFRF2^XM
MX>R58C>(K*(F/D7EZ!%B)]\$3E_LM0C'0Q63_`%!+`P04`''''`!Y6(9+`''`
M`''''''''`'0`''`\$%N871H96UA+T53+D#N871H96UA+E)U;G1I;64O4\$L#
M! !0`''`(`'E8ADM\$9'<SE0(``/X%`''`L`''`06YA=&AE;6\$O15,N06YA=&AE
M;6\$N4G5N=&EM92]!<W-E;6)L>4EN9F\N9G.55-M.VT`0?4?B'T9Y(:#&W`F@
MJA(-+<H#;44H4E7U8;V>C1?6N]9>0OU)_88^5.H/)]1<ZZSBQH0'41++W<N;
MF90_/RE68&N9!SAW20YT\SG6+D*F@O"TS.G,,B5=58"[. ^MKYF2M0PJ9S'
M(KE"H9![:?2#\Z7MR!2E5&@G:&>2HUN-&FN/UI0+4'2RO0T7J-\$R! =&O+5AT
M`BPUP0.C12,*I`-NM+=&*<S`Y]:\$.4YO!\$%'YE[J*=1T#CT8`<Q[*]/@T24P
MRIF>8@0[;"]@QE1`!]Y`83(IJII-MBHB711@N&2>G-Y+GW<U)>MK7U\O-J>P
MR-^U`K[O14I[FV^^;;:YAP=M[* ,7ON]IV\$CHX6<!LM>!A8ET]5SD\$ _69(' [M
_Q0Z,F5EY30GN^42?O\`V-O9'3YM=FU91OSV[EG10?E@<0&ITS]![V-I*:`;
MZ62J,-9+,\$65+-A+=%].1U5)*ZEI(UW;;,]IXF#56D2V:CCY>`J?L&(W:4V`
M6\$!E`FC\$+-XS3IU)'#7GOY3"FJ+FB2D08K/5`EIY;7]%-F`#@HDDS->,CWJF
MM>O7,,6!7S_H[(O/X_,X`M2;M3_&:;\$,7<D4I)@K+:VYI4F-8/Q>&H=9\$ _5#
MQQ!=9OW>+E7EZ.1X?W`T%">#@R-Q,&!`_WAP(@Z'>\>'?(=GPTXQ;M`Z:KSN
MC\$1\$W9F(0^JD\Z[1U\9`JV";F3NMZ>K`'_?);HFGX>^>2]V>=PW>!JDR^!"*
M%&WG^`IG<DE1/[Y0;3D)="7R.-,=*U`'YBKQI\$AH)1!`;.;.3W%E2T9&U]N
MSI16\$!P%58,WMC8H?G"YN=>0(H4[CV]5CS>A4.J3G61KGML7<?1_&OF>OKN/
MT8N:9?0ACVGI;_X%4\$L#!!0`''`(`'E8ADM>*+TBQ@0`''`/``W`''`06YA
M=&AE;6\$O15,N06YA=&AE;6\$N4G5N=&EM92]%4RY!;F%T:&5M82Y2=6YT:6UE
M+F9S<')O:K57VW+3,!!]9X9_\$(:9D)G&3NHT3<\$Q4]+",%#(). 'RX!?9EAN!
M+7DD.1`N7\8#G\0OL+X[21,*TSYD,EJM=L_N6>]*OW`^LIY\B4*T)\$)2SD9:
M3^]JB#"/^Y1=CK1\$!9VA]L2^>\>:"/Z1>`K-.0_ENTJ_GQXX(P%.0C7'XI(H
M.=*)C3T-026&:P62L6/#\$-Z"Q)AJ4?4\$USR0.D>CPR?+\$G(8R*,2+KI,>.P
MVS4U\ (B0]2**N5"H<#W2'CR\F&6VS[\HPE(\$<H+5HNU4&TUT;>>B<C7F4<29
M'@L>2PV-.?.IR@ (X_T^ED@];-V.ZU=:0D6.`B#0JM7HN>!)G(A""XX!>)@*G
MSILP\$`!8VVRWT&B\$6BVDV6?\$32XM8VV[-#@)L0JXB#9ME?*&F5.V&D_>6D:Y
M59J89;P4@=F'>M<RUD2E7L'"`X3Z=@_ [9`'R-#N#X^"DTQ\\$_0[VS&`G)#@Z
M/AP>>5W//P9/]8G2R)M\$Q8F:KV)BOZ*NP&)E&;6LU)IRKE[CB,@8>\0^G^FG
M#*L4DCY-F*(1L8RF2G7N5\$H2N>\$*-G8<:VA4I_*R?29`])F+3V78R[X^T`\M
MX^KMC<.S!1;QF`M2;O=U^#+27.Y0J""GBC\GC`"MY"EEZ6<W)3X5D#=#I*Y\$`
MYGTJI9G=\$>^)%/@):\$C*BC762W:[BO<7[/>MJLL*]WM>=U"!)8I,/M%&@_+
M\$)NB-;6L*H(D#`N=9I6\B2%"^A7V<2C!2+FNHZ6AAT.P6"A4@O5J3+]SVZ7,
MR3PX8*@2UU@"R@C\$*Q5FD/6S\Z=OGS^>3T`'YY:QL5F>>8\%`ZI>I0W.-BVC
MN:[L<B^)"%-9!I\!%PT<5["I?[AX!?XV#]T2?5,2\$BQ)3>`V,['O<A:N]I"3
M\$KR/FW3_&M046*Y\$SFW14F"X\$6)>*>M388I"8B`P4O0""^:%B4]&6B0]+D+J
MPDC9HY5W`CUM+0>HG,L/'NYH.^T#-(9)G0@R8B11`H<':)*X(?5>DM6<?R)L
MY';-X"@X#GH]_ZB+35S2GI4374(3LN<99\6JQ&94X/:@G:TD1`X1_54GB^A:
MBJ\AZ8)Z4JL:69K=?<F&D1W3L&&I`_LO6,#U(+6T4_6"J`7W@5U%Q%]4B^(X
MHS"DE+=(]?\!9#\$]KXA;UYLUF"5J2P"N8C"0DU>/B`VU]?E0.[6_N>:AUQ_@
M8<=TW:-.O]N#X6Z>^)VA.?3,8W-P@MW!CVK\$7[=\$-F/:3,6>J],%931*HG=4
M)CB<J<2G0C4I9E^#MK9+L;Y3:7:09QF[]79_MN,%Y[(`Y_V";#K?[:4'5^M6
M2<=FD/]P(SI/VXZNU_=/-#M[*9UG]QU3[SK5:'>6?5C6E]2B2Q0W]%8[!U)`
MR3>+O:RSWJ)OR]AR5V`9SGDN31-#08%'])G*LG-I+*"Z32I<Y974^GDV&E
ML3>+Y'_2W\$QMNLZK?==3;,M^?:YU^G`.Q%%(H,5FC%\$X&RMQV"EN01*0\0
M]OU<KK#\A"ADPB>(_ ,_%%"`_.#. +7`@<?D:8^2AA%\Q,IRNB2D=5DC/,2,+E
M(L0"D3*K*.:4P7F25L`!DH2@K1=;X4//(.=QH+0;PON5!-`; \U=LD8M\W][6
M/0U@\$.Q2[73@K^Z2?P!02P,\$%`''''`@`>5B&2U4X#+?H`P`_I@L`"P`!!
M;F%T:&5M82]%4RY!;F%T:&5M82Y2=6YT:6UE+TUE=&AO9\$9I;'1E<BYF<ZU6
MS6[30!"^5^H[C#@6P130.(0T:(2".304IS(CFAK3Y)5UKMF=YT2M7TR#CP2
MK\#L^B^V<4"('&+O[LPWW_RN?W[_ (5F*)F,QPMY="Z976/*HH^YM#S%XZ/C
M(Y6AA/G.6\$Q;B^@C+@7&EBO9VJ]THYFTJ%4V1[WE,9I"J&5EHC1&[Y\$EJ(TS
M97<9PI0+TL/D`NU:)7`*M\='0+^%VJ""S-,Q\$/#3%\4FK3\LS_4J3U=:LU!7
MN5G/Y&*-<[OBC1=]_JP0+?#&Y?,U,UCLS\Q\$26-U'ENEQ`!:*8%,^K.22Z53
MK(Z/[AU7)I/6=L#EEACJ! ?DP!O<_@M2?7U*\$*Z"YU5RN0F`&[]H;."WL"+3`
MS862W*K:]2"MF>ZS#BNE2G&9""^LP&D)'TV53ID-'MR>W\$>W3^`?)\$)-:/7J#
ML6!.`S'&,IJ5R2\1MA+61VD!\$0=76?.9V'71=&Y6V)RK-"-TH&7W0"9=,S%:2
M?)H0+D\$V[J[0%C[-Y%)-M4HO5)(+).!J<PQ4'XW,B()F,+T6NT)R#/[9CT>:
M6W8M\$+C#Z):3RES!4J@NE<1&KWFS>N<6S>_) \$TBXMCLZX?%F!-RECA"!P35:
MPH8;1H<*-E+=N"-(/2]02[^**2)<8%(&^6-WA"^LAI..^Y%Q>,)U1DMWJ\$U
MZ0I"]S;E*)+@0?HELYIR^YK+A"(_6QE(G+K*K\6/(:[N[OVT8RJG,D8P]\S
M^,1\$3C7DWYT5OPZ&2?T6)WO#+"_0"G"(N9?[-^YMJWQ9&7UY!I(*U<6)[-[-?
MLRO]+%>-IS7E\$, :OSMSDH(T&J#`8P6D*MA6=#H]V154ELE2Y3\$:N%TH8<..X
MTNI[8,L92&8OF#9K)J*/-#[]0`QHJO(M<FF#?4K^M4Q8^`=D@EU.OIV\./\$_

M>`3<C<`:_Z@'U9GCT"ID8&B6V6`XU\$S: `5. [V(SXXO^JL/WQX< ("&@^GHSPWI
M[I0KIBD3U-TTHQOKOIR;HR"\$NS.8X]=(H\$S9=8\$_X(-4=A)H9N:6\$A8?(M;4
MBV4;-]"`Q3&5C'5*Q062560.001\>OFXM_4(GKKF&B;A)YDRZ(UK-+FP?L8.
MZOAZ39VJNZ':Z/<QP49=V76_#"G^^^@FFX^!AM*)B6KD>5NA]-K3T:'S`WMGL
M8(CJKPS"\!D=%KUOCF[H"H8O\/@,@J:5RF04ZY0ZD#`W3,#,N?4NYTETB3?N
M&80>P(V=OG#Q%4,;>)\SM7@;W?..-WE47^?#5_5^NZ*72]61QK7">96]4RKB,
M)KG65`/_RO\$Y+\0XN@Y-JN@W.)T)16CUCE/WN[5NOY4];6I@QZ]LWP/5_Q=?
M.MU/FTY.?P%02P,\$%`Y`Y`@`>5B&2VU[-S7(\$0`UD8`\$`!;!;F%T:&5M
M82]`4RY!;F%T:&5M82Y2=6YT:6UE+U)U;G1I;65\$:7-P871C:&5R+F9S[1S;
M;NPT\!V)?S!`0"+2=%ONI2U:>H&%ME2G!830T5\$V<;J!;! (2;]N%\F4\`\$G\
M`C.^Q+&=[&ZY22#V`1K'GAF/YS[.^>V77XMH3ILJBBDO0['1<1F=!Z%SQ8%
MR^;TY9=>+<K[J"][(U@=;+[T\DME10MRO6P8G1L/X>0+_FXS',:LZPLFO`3
M6M`ZBP<GP-]`%O*AK6C!SSLVLIE&2%;?F`#.:RJ5#X`I/+@G631;5\$V+(L;
M"PE],*>JS8>3@M&ZK*YI?9?%M.F=!+3/JRRGM37K(HOKLBE3%IY=SZ*Z"B\C
MEMU1"5),ZG(<X-0T_!2V2^MFX+6\$@>?`EA4E&0(KHIS<U-&*O.LH!>4S<ID
M4J0E.20_O?P2@=_`BRP'J/M\$O)2/_)T<N@09V"?7K`96B_&KB,6S+]*TH6R?
M`-%O[;W\TL^(>%XFBYR2DZRI<`JMR:%8D5-&\$CEZ'.7Y-(J_]Z*FH?-IOCP
MXPC/12\$)2%3?WNV3+Z;?P8'!0QTM?0Y)_K*4G`%7P].`K&&-`<G;`8,4C^]
M3E\$2`P6`1VQ/\`]8_5B]QT/MM["":`I'TCB(2!8G,.2B]QL;8,-@P'\$1,@?,%
MO2?7[8#G#R]+:]0_6*+7@[ZP, SX\L%`N"K =>XYSQ2;[YMYG;\$9>D.TC4BSR
M'(_/VFE6U)7?4P);Y'N=ET7&RKIQ^3E=,J12',HSD-)QGG^,8^[1F(O3LB8,
M\)`QG!>>EU'B<7@^4G^SK'"C)"F?<\$@`BQ\$J0U/BZ3Y&K;I;5T(XK=\OKK
MI'"@9S!@TXVG#@*>,RXL)R]JBVCS8(EBRB.%/V"]#\$CM#WK>/J'IE>B"5*6KH
MT8=\$CG7%>CQN6^CT02X&^K#?R`.3A&_XN<N#B?`;(%@0Q<^Y)J'M#T>D>RV
M`+.R2FX\O[4VTN!IS8=#BQJ@+4/!P)\V!`^2)?B5+%;'3F#&N*I.RGF4%>&Q
ML/7RZ82F8+A.S`4>:I!ZP(/V/EED27A)[_`_GA_>E,*2>+X?M!.E:1O'8(<;
MM-#C(I%QGG>)NQ"F[-"A5I.DIWE;2;MQP<EF*R!;)_9@F.3YEF]Q(RNDEU#V
M"\$Q,2D;&C(0^)(RG6<[`(4B3<@ [&4`K>&7]QY'7WU<!Y1FQ14S7_)./>,*J7
M!\KN:??!U^K5M^BD(T91'R4?O=8DJTE_C',77YQ\>7ZZ1=XDC3BS5\1^?1AQ
M()R!P...!^QUG4,2U9%\$[:)(B)" +M@.[FFRN.C`R+C`9CGE0,\0:3IW2MN.G-
M6U4'']K^ [3"GBM`LR^,2J,+/RJSPM@ (0E18(M^]7[5R/:^ (8348XCRHO712D
M0M6KPG82[(NO^C1J9L=E0LW-^"8960&NI (@Y,X`0+TN[N"<-^"4 (@KA-47;K
MJS)+C@C-&VI:LB-_\$*O&:6*O*;"L\$+A-+GMS5)0.+ =S,F',>R?Y'1%`^S+/
M@!GPW`!9"[EG3<?PX4)88NW\$6L.M6W? [&VVUL[DW33Z_V3G]CE:A!WM&FS*
MH[:EV%2J6J4FAVO%LZLS:<<<`\B;14#QYW3IM<-^CV.Y+L'6=E=^V_[]7(,7
MLG)9%M36(_=Y!^*,&W02(-G<',&YY[G<"XF4(DO!`) (BD.&&QUTT@<"#1R:L
MC7!#,F\$-J19U5384)^:E#&-PHA."ME@M)7?/0YA:FHC'?7)F/!OGPB59G^TZ
M6*\$580G\ (V=V*^`=%X*SVTIH70/<ANTH%;W(0O[R3;+U0A/78X\$=#!@>+. :T
M\$'\$90/_V4<_1PH4!5C_BUL*LB%J6<V350JJ9[W2C^6/V5!KNX_/S>!=DM3
M^F+0YZPY`IS3PWQ_+>(V7G"YHTE3E\$C9ZV6Y*SC!0#0J9HP9D#I=,##`C0?
M'Q_==Y]F"?UX":.H_758IIG<="/Z%B\$I6"9[FB!&LI1%4E4)_TKE,#(!)Q;
M[8%=F%+L3E&"X`88;I+41D;*0DW.W?/*_D_X+)XU*&9K49V<MZ^]_E/O0N#5
M"^^+"CU1\$UZ658=<A[IJT<RXY<ME`D;*E#]'*O9F);R+\$A(+`P`\7Y/LV2D=
M.>PS`;9B<GNIT@XS=UD]-6QC/X50HS/\C7#(P)V*+3=DWGD".A<X.S(R,_(
MI8O@J1+/YC9'%[^8O!W8^[U<S+](QU(DFYOR"LYL4MS,**\1^!L"AT@6:_DL
MNVFM'I(3((D?AKNIH1!V<\-[37_09A>]&?S7-+SM-%9B#N.6"++#\$<CIT_BV
MO=L6#3;BW\FB/I\P79UE)K1%P%YWC7BRA6RVI/'WJ\$D3,HON*#)@6C[P0[J+
M\@7=1.MLITO`#F?DB(Q<]^N>]\$1DG1N`Y5J<"36\$R:[@W49+4+AMQK)<P!U
M6BSFG;K=VIH(L@B`\KB8FE>H**Z/&E&.1"W@'(ONP`^0B*?`I*K+:4[GC05Y
MX^/[N'QH]8NC.?(M\$V&;I94[_@I/\$>7?VO8FNU))XQ!.I'83>R#9VP!P3AML
MA**.@2?\$1V\$>GB#VUPP!O(`"O"/X%DH*RWAL#V?G!.N.07)FM`&12HE%RM_3
MN@@[<: ?*9-NV2`A-`X* [#<+<)9'MTTXD7D=AC3F&Z\$+]K@*<]QQB.+%JS46
M'BEI68D/P<"^`Y2>^S1\$T,*2*5]6Z1U9I2(<->,(_Y&\YL?W"=.IPNG`[G
MG1#T'V>\>'I:=MUK&\$VX1J8]3A*=80<F:]8I1\RKA%PC>_L-4K0_I7F%FG]5
M4!]]%?=K3)K.3R&>SNVTYY/C\`-*JW\$.O21SE2,4QEMXJ1)Z7O55\3#`E17@
MS<#S473F2#ZN-*+1B^O).>PO\$5X.+&R2T`3^;E_RQ)^7!N"UXD02=HH(\$V:@
MPL6Q[%Q8100`\$\\P)I9K.,Q6H7!V:W\TG]MHV`V(ZN;:1H4`X3_:GMN-?@B(
M74+>[]2ZG,*/G@P1D,C\$>:2\$^_IV%(9/C)6>NS6QQ^<&QK94`B(,DHPH-0VN
M6(D^E5QR5?)F)*^;<<<IBLM#3;6"HKN&NC0I.2EP&\$)BU.M[R++Z"XSS;A.3
M'':Y;>;!6\=?7-^;Y)GSUY`[CU<#`Z&4MY@98K:FXU:AP8\&\$P2S8TX2:)>
MJ=E@)RBM[\$[+9`GOU]I]D4IV`8G,\$-4A4J(C8P#1D!2(_Y)(O;N7/^&[V@@;
M%VS\DW.M&`1T292-\6Q%URLBE1!E91]F9?F]Y'-(8\$,P_CW\$<HNF+4XJ4`TO
MBF5@+&H0\$L9#U3>`L]`RS](E`9Q-"6B<WR8G)Y,16T7]S4%Q66[A\:<>`0?Y
M3G#0M56=^KLCYH!NDYA\$^0W1[`(LY3UP4`!'<++. ;F>BV6RU5O1U!')H;&UR
M+H>WR=L;\-\$LIM@5W5Y?WZG:KFI1V/*;FCT+J(?T60R1&#PATKXR-O"HNK3K
M=<'4@"*1,KT!SV`3KC'GGC7JO7FB9_YD[4P8.\`?XF9-T?.@821PT)U]U!<,0
M\$SWO9TF\EB39;@&KZ<W;/_>)'@[(.B=?..1=DN`/7/))B+8R#,!JF3#/-NB;+
M<:\M>N\$-Q@W>L.!5;<]0]+6^(4J9W`QX1(0;)1&+!!%"^TQ2IKN`WHYT;W`V
MV`6X3O\$Z7C7:~9>,'L[.1B.'?!T=D?<M\$`L`8C,(IBRYAI@G/Q6#N;N[_ (9!

M!#F]-!H>][_C'/HC\$*+[@;GSZ0)L+(7\7P234=Z4I\0-JP6,!IP<%78'(DMC
MY:3'E!J<_B*/1'" ;EC@/BZ6`J^%@1>@JR:,)T&:@QZ)-EHB0[[JB\$#^<\3X'
M\$`Q/\`WJ@9=-Q\$5IM+6D(O`W(UW-RL,UM(C!YHP5O[G:6[&ZT!`*DM_BB=Q=+
MW,J[WNCA77^_(T4WR,\$A6%H&Y5)ML`:.!F^HSEOSL`_-VEI;B`\`"M4]0ZNTK
M8:H2S_C9E.`G,KSX-H<%XFZ2(8U\@M`JV17Z\$6[=B1SV`,`\$?>1FJ;(>J<)(C
MG=?9C[3;4+^(ZF86Y=_K9;N[*!%%) "1?@C/:7'+9KZKKOJI3?AX&S/EN)\$A
M;V_HBV\$Q0":'-B+R9I>'>MQ9O9HE`KS>O)@GMF["#Q2PH!]Q/XP.K]8!<'AI
M.Z`LU3D\$;ZM5(GZ@S+`D(,5[8Q_NRY7S-IBCRO7!3\$"3B%"//M!X(=,/=E]R
MR6UG:ND2B.`^_O22CIG6H="]C@,->2G0K,EJ9UKE4<R)%S%H45:=79@+-L"N
M5+&\3\PCD2+5%YAX;6]9!I]G#ZZ7\$>083;3-) +Q>55&MQ_E2'`)#_C%Y"XM@@*
M'6^I:D@"(SFT;LIT?+4/UT'!"])\$S\$!YY,I7&>>C((`00;G\$+85KC%+?QSF4
M:ZC59=7@A*D@`.: "O\$;>AH4"!1GU-ZY@RO9Z,"Z!\X5P?0T#U]2>":!S@)`W
M\221LU>L7H\$))MK;7ELB^SXXK@#?*S0++GV@O/),JWQ\$K5O/68Y9`9H&!T-GX
MALSX_69XOQ)CUIR!]SZ4+.,\$!\!B]/#VR,>=`M1WE177@7.CY;0!\@7#7D+
MG'6,Q!%ZAW%/*N<T<P@!Y-\5KT-QM4.U%[[@\$7U-0;!/!'Z#HQDAX>7I#]L(1
M6FO9N(0=52'9^`#=_H4SQJIF?V?G%I`LIB'8_)VD9`5E.S&4W^.\WIGFY73G
MK;UTE'[PWMYNE\$[?>?_MZ=O1[MO]NQ_LOO7.E\$;O)4F\N_=!^MX[[^PT=;P#
M'6M</<NK.IR]>O[6KMF0L47F8-L:.,07F;3B]H9Z<J4Y#;/;=4'-J:IA.=P1Q!
M@2P8H:DL'RQ9@L"QK2?YD&Y!)YE??*]8?0"69W(N:[10.#H%B,[=\$5>%NI@!
MI;A'#SL/\`?L"SR5KHZ:J\$^N+V(3'4[J!Y_XZZ\$)12:ME\$':PO>+EFV3!]:'7
MJJ['!=,%O6RSVBS^.`89`C]W4&+@A;%](Q-XN<K3^G,D^NZI)1X;X/%4&C%2OI
MG!LV;:'P\8O4\$]EVO\#TG:^^UW3P2+[*:K:(<DF+)9^!)\$OA#HBF.;P:?W+Z
MXMGI^.`3K9Y.;TX";FS)7W.7^[2XR^JRP"H:?\$OO`O.U=?T43M\LJ;*]BU[VA
M:NL:[5%<K8M?RH%TZ_ZL6F-\$0?KJDQWZ(FR`@%0G<&7.84H:<[+>MG=6HH)
MG95`GGI<&KA]/L:U>(WKCYM6B=,?B`SX;Q,V"?-YC:[K+S:@`.9&)I3/'#*B
M\K5M1O\JDZF!NT93O5YA-G??8)14^!<P^F^N-8_H6FD^_]`^/YYXVGJRKF
MX,LO_4>,)19M2HPB"_J@<KR_UJP*:\$EI99/F]S:\[!]>%S&N@QA?YFPI>5G;
M;!>K5C?;Q5]`ZI36@@(#F0=V,S=&]HGQ>\$*!877\$6<_7P\[W]0<"V&+]6<8P
MO]-C.N?#J:.;5[WSY\$P@Q`70<QAD\!' +R:0%YFP*H!H590(.FWM@?:_+O6N\$&
M*E17<)/(*<C59U%Q2SW[\Z>`[\$()R&_3YN'\$5V_']3?&5H>36-7;<82N_;;*
M>6-?:9QW/KB";HOQW\$IER#?'X0)S#V#=#!9Z*]R29`U^`M`_'5'?;(Z\$IA%X
M`.BTP3/_L"9W_LI#8*V2O(`@E?69JW\$)0N;?;]Q`K7KR]4ZQ+6VL]K.VU^
M<MC_L=J*Q;W?1V]ZPP-T;]4ECJ?FBK=8X4`"RD)==LB7ZJ;-6C[H]I%1KUJY
M:_DI6`<;PQ>Z7(P9+5#A=:2^C[5AYXK7WW.1J_,#^JPRX2K1BZH*F,W;/YC'
MXG@3*(R*XMKAJBJA0&QAZ>5(IT^YBKQ%!8VZKMT;)C+FE/5V6`)![RM08KF7
M*`<KVFL&<;UWW08UXJ`_F>Z0YG0,UBN0S!PT=[GU0SWB_2#.F?7A,IM776.P
M\$<^S_(+.8>XGQ_(&U#@`G^<APD`-"@6YR@I56W5_;OGV8%O`QMN#D+B(U)*6
MEK<I\$`#2"\$C%;[%F[HK3US?/:=\$L^&5@4<4#K_D@;@`U`)=_9X>7[F!;N;B=
MB7!\$U5<U_/DURGVIKQ-A*5'?DEF[EXOH@5\9@IWT#>M\$:W>TJ<A8X;<9)'6>
MU/SU4-OOX_L1.A9(?)\$'[P9!&T'4BNAIL./NM946)\14_RP`GI\51EKAHPP2
MC<#0#0BE=_Z`O.-\$ADH>_TI3?`BFN2`4/_S(+C.!U8ZA"-`'\VI-!Y"YX-
MR?=_!U!+`P04`~~~~~!Y6(9+~~~~~\$0`~~~\$%N871H96UA+TU,
M;V=G97(O4\$!L#!!0`~~~~('E8ADMSG*9QB`~~~~+H`~~~~;~~~~06YA=&AE;6\$O
M34QO9V=E<B]!<'`N8V]N9FEG78[+"L(P\$7W@O\0LM9&1<1TJYTZ4+\$?6C3
M\$FH>3&:JGV]**T)G-Y?#N5=6`_B@X%D@U=\7^PX,[X.C?6=XH3M]LRK<KV2
M=?"M[0@T9C`'+)],J`\$IEFSZIXQB#("FN9-'Z\Q?/AQ'>^I)\>)V>5Q!._.,
MT&^>,Y&!4W!@XJ<7LW_L%L!7U!+`P04`~~~~"!Y6(9+L)1CP=@!`~~~"N!0`
M)P`~~~\$%N871H96UA+TU,;V=G97(O365T:&]D3&]G9V5R36]N:71O<BYC<Z54
MP6[;,_`R]!\@_<#[]:;&%T.S;H@+5#AP'),"P9=BAZ4&S:T6I)GB2O*P)_V0[]
MI/Y"Z3BQ4\M`@I8(8I\$B^?A(24`_'TLK5` ;S!^M03L:C?36ZTGF.L1-:V>@+
M*C0B[KM,A?K3M_W`=!O6WUG@/^?95@9Y0H9HP>V=I>WQ2'&)MN`QPFRJLPS-
M>+0>CX"D*)>YB`".N;4P0[?22>,QTTHX;1JOK7,7,.3*&MLEMPCR%/3R-Q5]
M<PO<9#9L\$K2Y.A\$I,`GO+D"5>=ZZ=:X]^<L-%-P0'X?&P@5(ZJ3[WEI8..F'
M#")=">X;!6U2?9J@*&+>1X*C*YW6R<01`']RZA6)WZB*YJDSC'Z981#%MR<
MW,+ZK&+!:9L^G!SB,'<U,)6A\!X:Y;(4>8*&U<%^>*IIP/\$*V(L\(%2G[/K=
M;Z807B'1IZ)`E5QK([DC)C6A<UB_KVC9^F[ZL:^W`Z`&#G*N=DSZL`?PIZ@R
MMX*/</9Z\$D/=)]\$6NEFP,)J72]NL/X2#Y1^8O9>\&YU_V,7NIGU5J3Z>Y`M`
M>B?HP(5P#O4!96POH0SIQ7"E4?4LCB2#N<4W%1(<`51U-[*/?#>#V#^5'='*
MWX/<,(>8T]N:>546[RNHNV'?L]02P,\$%`~~~~~@`>5B&2[\$--REQ!`~~~A`T`
M!\`~~~~!;F%T:&5M82]-3&]G9V5R+TU,;V=G97(N8W-P<F]JO5?;;M-`\$`U`
MXA\6"ZD@83OW..`8A2242A2JI%P>\K*VQZFI06MVU]!P^3(>^`1^@;%CQTY3
M0I"`AS;R[,R9Z[\,_OCVW7Y\%4?D`P@9<C;4FD9#(\`\\[H=L.=12%>B6]MBY
M?<L^\$P=>(J<<Q[)]UQO^3B8P@8"FD3JG8@E*#K4G:1CY&D%DAE\72B4/35-Z
M%Q!3:<2A)[CD@3(\`IL^?("(")R#,6+J9F-EJ--H::B3\$/HD3+A0I5`^UN`=
MYSGV]\$H!RRR09U1=W%]L#NK6W5^<;E2->1QS9B2")U(C8\[\4.4.3*]"J>2]
MH[\#?71?(>;]C.1>:56QX*G24Y"(BH.PF4J:*:\;@9!`[8.[Q^1X9`<'1'-
MF8";+FUSZ[@\$/ (NH"KB(KV.5)!K,B*W&9Z]LLSPJ(,K\$'J>A[WSNMOJ-=J??
MT5M=:ZIW^N.) /AHU&GJKT6NTK'&[U7IJ?46,2J:\$>9FJ)%7GJP2<Z1789O5=
M<HR29` (R7#(03WGD@W"*&(4@;7/GM!2;<:Y>T!AD0CUP3I_SY1*\$;=;)E0HI

M(7:C5790L=;H&\YUK3X52/K(Q6615^=#Q^@9+=N^>@4?AI&, (K0UAB8<KI-M%-@B;<Q)%3\&)(@J>!*R[\$[-P`\'%ADXZ2J08IGTLO[`5HQ:@MK+0S.U*VRV^M_77V9:=8\GK[LBX7+)<SKI;:V9E-.V^22.<>8KV*71Z6G==(66UXC01I%!4^]M9EXF*HS#3WA.(XD@Y?=VU64WU7%#MLCE%\BV(5>:@I`!NBX591C:R?3)J^-MY[/1>(IIMP]+F:D07,P@ZT\$.7N\X4;99HY5L;ZA@F+;G62=S.K99_]Y40A3QM CZ^8I`\$B;AW609EA_Z/<CJ#"*B\$OY'5/#V)[W(6K?9D+' /P]PDK[#HH9?\GM63?&_D1!O-7(9Q" `P#D)Y(1Y4>K#4)NO)')A__\M#XX,`0<QOHTCXWG(WA_\$M/*&*YO_FH*HIME^T-L;F%U0D!RLZB/\$%*..94H>AHJ_:IJ=E`=\7_S\$F.(SJMCH"ZX/TZZXY)R#BHN#"]S_I<2F.8EMM3?<Q4C:E&.D1,6<)0ZW-@7G-40<=9M7GY=#Z<HYNT-P3.,Q71NC!A5V7:55]8.P0AD@#EG:_PG,]NN^5U>M32VZ[;MU3N-IJ4/V@-?M]J6U^XZW>P/J]JIY7P'DH_2Z'MNL3UCSNM%_[,PSSB]W"'N<M\50=7L-M4[UO^:[:>L7"-&;B#IC[H>]U^--;O6;K(&<R/7_;F5G*L!/"/3;0]M+C6I# [V!U=9[_6"@=WI!1Z=>&Y,4=/LMJ^LU/+_]D\$MK50>E:+=<=<=?P:B4NMUN3KC<10^>2H;LD=7<>W`XGQ91&LR(JG@N3[/D'7/9#R`:&^OZ8K*B])B.W+M!\(9_@4\$G2`%(G\$!9R:AS"<IPR=\$MG"14!FD=)Z\1&Y!),Z=B`H"92LD"0\9MRD.V\C\@#\$H#L;/&#%@.QRKV+9!'#-PT\$6.+KETT1IF(X[O*.`@7B5ZRZCC]5MRGX"4\$!#!!0`''`('E8ADM)%IY"Y`''`"D!`''`D`''`06YA=&AE;6\$O34QOM9V=E<B]-3&]G9V5R+F-S<')O:BYU<V5R58]-:L,P\$(7WA=Y!B("312WW9U&*M[1`2Z*I@Z, _>D<>*BJ0QTB<DD)MUT2/U" I63\$,ARYLU[[V_G]]ROK.&;<\$'MC:[B]WG!&3B)G7:JXI'ZNV<^KV]ORL;C-TAB'X@F?%WNG\:'A'"AXANBX46(M(=#<VY!;+3T&["F7:\$4'6S`X@!<VK*,VG7@HBD>>T(PE^*C0_M5C'-@27:?IMR, \FTS3U6D7<C10983)M3\$!]>CO+6%6Q;`7KJ`X+MU\VG]F)EXCOU'I:>14MM.`KU&ZAV%6TRR6\$`I;B63R'\$58JQLSB7KO\!4\$!#!!0`''`('E8ADL4#B?-M`0`-4+`''`;;`''`06YA=&AE;6\$O34QO9V=E<B]0<F]G<F%M+F-SK59+;]-`M\$+Y7RG\8<F'#PSR.E!P"22\$H#1&)Q*&JT&)/DH7U;MA=IUBHOXP#/XF_P*R?MB9VT!;&JZGAVWM\ _/OGK\0*M8+1/!@H[M88\^"MUE]/.R?MBP^)<B+&ZFFZ>M6H=QXS5XK:7\$T`FM;/`&%1H1-EG&[YN4B5#?FK0/N"P4-6_F&"9&N#28&:%"ML>&RR;%8&^01\$8Y>!`MNOUJZ[IPH'J/!=\!#A?*)7*S2=DQ]`IW/B_X>26PLSMHU>&QSGI!SV*LTD^2Q&""=S1X[/6\$!9V\$,5"">L,=]JP7LY="";`H\$N,`J;PM"CX*%>DK6T7\$`L(X0N5\K&_0O4Z,H3?6ZQ4ZVR<8V['ZH"66\J\2(5U."O;\MZIW6.JX[]_7+DR<P7^M\$1F`2!5?"K6%/\$#9&;(7\$%=I:Z&*^&.2YO:R(9582M9?D28:M%!`.=<\$:.*"(&+2^!F98^G1RR!W6MEL^*O91KG-96>#<CU0A292'KMCA5H\$Z\$!IT\$HNZ&Z`DU5[8/1(5J+%E*=0)Q8Y\,N*P&XW0^^6Z>M/B.U%4:KMF+`)1M^%8X^?56QUAMO!^?"#":H5I;C?AZ?_%-I,(K<(/B:Q3(%#,!TM8)/7MZT\ \WS+3>P)/Q]VT`?9C0=?'&>)5+ZWUE4%T\O24\;S3.2\X:LLZS4\1>(MCHZ19C?XL](/I1TL=:*B%)"%AY5_=XOY^:TQ4T\XDX+4/\(N)0RH8F+J?+1\$M"[G#B- (,5%`0YCT*`D3"4=&W250(R;(;["1N6#)/R6=6*,]:?O2=9IVC;BF)MK!=,R*(?BPVO*7[JOW`-K\$3(^U2ISC`BHF6%_4?0?1!\$4G;O`\$#ETH0RX+5DMZ!U(&QPY[2SP0B7T#VBO\;M9"2J"9:8%);Q?:0Q&%?7T`)#AFJL5@BRRZ`M3MH9\!W*3'W;P)L)+G*#(U"/-JBE<TMF.B=!\AW#.)+Y>V^Z9?">3:WZ)%!MZM*&B=N9#&&R.%+9DOPOD=7\B\R]\.<J[I8H@TZKDK362\A57:]?&&D#I'M]91M0T%I)AB3^]0SF">NBP9_4;4.S32?+6XP1!I#?NEL4@W&/A1XWF" ^492_]X/M[O=HX#34E3X.HN@LT\H<R>HER[W-Y_NY5L+OPD<[EH_%,7?<.'8((1)6%&%*M2&WU5ZQ+&PXT/S=D@TS900A]4<VJ*W9H>-:2]\$F6WF41[G?(@.9R`>(\7\`5MQG(+53G<GRKY1!\$D_/24'B^A)4CDAP\+AYI.M4_#J0MQ2:J[PR2.TT^T/3[YM"XF\$5\$PQ2O_I)FWT+G/K#NM%MG-HV<WN>,,%Z:H;AYE"7C`^0LU'WV!_&@FMZ/J6H8;2XJVV)OZ/IZUOWSK*U!O6^'XK'O3W!U!+`P04`''''`!Y6(9+`''''M`''''`%0`''`\$%N871H96UA+TU,;V=G97(O4')O<&5R=&EE<R]02P,\$M%`''''@`>5B&2RVG+@!T`@`D@4`''L`''`!;!F%T:&5M82]-3&]G9V5R+U!RM;W!E<G1I97,O07-S96UB;'E);F90+F-SA53-;M-`\$+Y7ZCN,<FFH2.JZ+:G*M"5)11:*`VE() (0YK>];>=KUK[4^*'XEGX(#\$`_ \$*S&[<.!\$)L0\>SW[[S3>>M;_WGYR]OA2KAMK4.Z_\$-<HFY\$UJ]WM];7_`*B1K'4UTW0J*Y13,7.=IMN)ERM: '2S`MO?.SJ"*U1HF(29XMK4+%0"EFGO@%+%+=:9;%8R+5R1DN)!;C*:%]6M]\$3@E-)/H5ZDL^A`<V#.&9%YAW8,TXJIS@/88K\`<R8]6G`: :ET(WD8VT:L(M=\$&\$S@5S5/1)N&I5TWA_[^MS?`%ONNA..(G#P?5[799H!B^>;41=HLV-:\$*9MX6`;;*H5%Z4W;!!>L;IAJMP,^&5WXW.T4=-5-:T19\$7(9PN\?`&ER/-FVZ<ZPM`FMF'O\CT\$OG#49`-_1;="Z,C+3?"RLRB6\$.G\$F:4,T>PU@J2K4-14+1B["]M%Y1V,.]V!;;P=?KQ&G+Z\$%JA<C1SF'%HM0>%6(1UEI/EB"-R_DO)C:XC5R!ZM&4P4!?3R>M\\$_-F<@XDS\$7&=2_TVX:QI67;=VM^O?H\NPS&)L?%:O2F^;)QM*3(0?&\$;?J!#F\$`X_=&6RRZGM?*7GE1#`=GZ20Y.9V<CM*S<QR=3O)BQ%B2MC-+D59*>YR=IRL_[0=RCL>2N5=\\'/:L^#P?/"NMLIZ[O@")ONG-T\$>@B9;RNMV0.Q= .PK:.'Z-/3YMU[(`C[X.D/39V]P+I[WQ^P7FFA.TFR#>3BQ3\$I2M#S*M1-UVB` (Y[)N\$U04Y=50L";M*=J\$@:R`^L"+XX/"`_.@=;Z2<%&5*C%Q&TP===M&\!/!\3@9'\9ON@,5[FVX=_0/W8C]"U!+`P04`''''`!Y6(9+`''''M`''''%0`''`\$%N871H96UA+TUO8VM,:6)R87)Y+U!+`P04`''''`!Y6(9+2CKQMOY\`''''&`0`''`P`''`\$%N871H96UA+TUO8VM,:6)R87)Y+T-L87-S97,N8W-EMCDT*PD`,A?<#<X<L%:2@6Y<NW%1<M!=(QZ"QTVF=M&`IGLR%1_(*3OVAI89`M\M[(`GG>'XVP.T+22DW%6JNQC#:EM61J+IU\$6W+DV4R1F-UEZJ5TK?^`DR<\M!`"-*47()L58."Y(#<&N-'G,F4??:M5I!:&J)K-LP%4@82+RM*FWS_I%QK`

M,3+;9^?P-^!R`];U-1\N.KB]13]"OP!02P,\$%````@`>5B&2Y*.^M&N`P`MX`H`H`"<`!;!;F%T:&5M82]-;V-K3&EB<F%R>2]-;V-K3&EB<F%R>2YC<W!RM;VK%5MMNNTT`0?4?B`Q8+*50B-I2T!'"',0BY0B4*4E,M#7C;V.%G8B]E=TYK+ME`_`)_\$+C!T[<1K:Y`%\$I"3RS)DSNS/CF?GUXZ?_] \$)P\AFT84IVG/ON/8>`M#%7\$Y+SCI#9NMIVGP<T;_DBK#Q!:<J84-V]7^%9NT(>8IMR>43T':SK.LY3QMR`"'+/%I86WRV/-,N`!C2M8J)51L75#);P(/@-7"6A/F%ENYAW>N`?`08^\$M^"<B4=J2TG7`N7WG=)P#RXLR/P\$9D3MXF`Z4M1/=S`]7;GJ*2&4=!.M\$N.0MGI(1L\4!A?,'6'.G\7>H&P<.\99G`^G\5C9[KE6:%"(4HN.8S5--<^?U8Q`\MP(;'RH\$S\$Z'=)H\$`?HPRR=^]Z&NB(<<6ICI<5EKDI>H^G*K#=ZXWN5JJ2H\$OL\M95`PM?7PT?%P\+#7'X;[1\W6`?YQL_UH>-1L#P^[[<-GQX^.`KWOR+&VJ6A>MIS9)[5F60/"2S335F>^M916JFR1],&PN00\5CT`'99P8&-;TE9F8Z7L*RK`M)#2\$X%2%'U<^ZJJU&V-`S'B&BDOPFF:%7M;M4*/H7.F/98Z#SRWWV#WTO3^KM*^,AX)#E>&8!T@9`]]%@0W2%\$[QVC+"J6KS-<MFNH.N+Y=M6QHNB^;;,.6: _M.D4AGF1BAK4<6)V`][5%&[_B;W`*`>8FIY_%U8IE@7U!/N4&2ZGFS&O(W*)@QM.2WLIPA;B=>>8B8!;V,LE=8\$_<&S-^`?G(V[O0&ZW516-@.ME1Y#WAL"?`U\$M8GVO)JM@[ZB6V,5>YATF:/E>`?D?17T,'*B!==RW`YI\$,R5Y=DU,\[SL#FGIM:J^@_L=PGE@0&RUP###HG#!`3F3(TP@ZSB0SB,+.N1.#S5;#7L!W3\$;JW+A#M3([9R^*)X.Y+)C_M!>Y32XN?"=CUQ+C>M#8R)@NJD[T=[05\!=9]8>U^K'A7M9]5Z\A1=E[\$>E@3C-9(>I]A%CI0F%[X2=9H-9"IV@B98[:]='`900[`5PKG;`MUK-D607Y\$QFKW>23%.WV\3!A(N\$0Y@'8A;38),)>A=R.]I4KSGK=*%>0RX7CMVF*6K\$EO-9NXEQ&!6UN<D4REFA2[,,'7.01C[A(:14NYI>8C85BN\$1`E\1L3MNP`2,I(9+F/GA,J(I!+7LWR`\$69=@FZ6G]>(UL1@9^)4\$ZA*GR2*2;2'?)VZM2PP`V=J02A\N<E7CD.1C&/=%B/\7FZ-99B6^F`;VXTMZ*N@S2;^K=:3X#=0M2P,\$%````@`>5B&2R!L:'.+````[````!X````!;!;F%T:&5M82]-;V-K3&EBM<F%R>2]->45N=6TN8W-ERC\$*`C\$0!=`^D#OD`+*@EI8B-KN5B_T8!PV;3#23M@\$\$\F85`\@I&UD*RGX'AOYGW\Y78T\$GM,D=T*RG^: [/VUJ*.Q_,W6R0,1M<OMK:%K;3W>XL3.`>%8H.F!!RYG*0@<\@4TJL[KH36`'"%<9="E2`EI[J`*6N\$MK`^R!YMP/JM@4<-R[\`IRGP`4\$!#!!0````(`'E8ADM_1#>N````'8!````@M````06YA=&AE;6\$O36]C:TQI8G)A<GDO37E3=')U8W0N8W-E3DL.PB`0W9-PM!Y: :F%Z@<>7"C5VU\$Z!THJ04\$*:)C?%D+CR25Y`6^[%.2&9X[\U[\WZ^6B_UMF>6=1VA22I;?Y&"4`H'2:)\<08.38BTY27U=8P7<\`^`[.!.5`)*)^`H'FA+-M&`"6"V"9\$?5)EHZ[CI([)2R4;4LE!/?/H6H\$LZ_)AB-Q7LI!5)G1@-IP(Z<S.M)OTM*%'U(]J?W#>CS6Y:V4;QF#I7S&)[9M,??\$CI<5S@CS#&%MX'4\$!#!!0`M````````'E8ADL````````@````06YA=&AE;6\$O36]C:TQI8G)A<GDOM4')O<&5R=&EE<R]02P,\$%````@`>5B&2S-FQ.!W`@`F@4````\````!;!;F%TM4:&5M82]-;V-K3&EB<F%R>2]0<F]P97)T:65S+T\$S<V5M8FQY26YF;RYC<XU4MVV[30!!]K]1_&.6EH2+I1;VDY0E2446B@-I2"2\$>UO9L/.UZU]I+BC^);^`!MB1_B%YC=N`\$B\$HK]X/'LV3-G/&?]`^?/X\$A/X:9Q'JOA-4J%N2>C7VUOK:X\$M[:G"X=A4-2FT-VAGE*/;A)MHC];42[#MK;T]N\$2-5BB8:&EL)6(E\$)D)'@'MSF&5J0;(06ZTMT8I+,"7UH1IR4\SR2GS&.LE.H<>C`3AO:4L>'1#&)"3S&"M'78+!,JH`-OH#(%R2:Q4:<BTD4!)B?AN>@C^7)9TW![Z\M3?`ZOV^B6O,) ^M[\KD#^HL\ (VO1=?UR(OT.66ZEBJW)L\$&ALM:1JL>`Y6U4(WFP\$?K2E"[O]+MV-C4C:5IR>A%"+^`QSN'YQNVG1K18&5L`_\$!F4#Q83H!W`#7H?1\?Z[\A1MIC#.0PK#DZK\$0QQ/R:FFYH@TOY#K/*&-AUF[*[+%K>,/5Y#SQS`:M>?9PT1"M8P)HQ`"NBYSRQQR)\V]*:4V5N"+1RVBF)*"3U_DGLGD;\$ \$PD\$3XQKGJBV]9/M+2W:OEWO[>6GR44T.#LO5>,W(Q>-*\J`Y%QG;<T]'`8(QF^U<5BT/`^4O0Q4M]'M'IV<G\$D`_S@1P5QC.@^`D,#J3QX.1/!2CP^SD[+C(NT`<H77LL&7_1SW+M?H`'T)'SKE77=<!1L.UY.H]TB3)=5^*>65KVI33I+@U=_DT@5<#[4&5HN^PUMSNAI?\I^YHGF+,W5F,>3*Y1B18LCS=1-BRA0"K9=7)V3<T?%@K"MY.8*L@;2MCRN!=W9WN'-PI7G4D"\$W>IY` :WS=MM'O'0SWA[OIFSZ#BO<FW%O^EZ [%_@%0M2P,\$%````@`>5B&2T6Y?CRR`0`W`0````!;!;F%T:&5M82]-;V-K3&EBM<F%R>2]387E(96QL;RYC<Z53W6K; ,!2^`_@=S@P#AP73]G(A-\NZ'VA86<)VM,<8X<0^I%D7RCF2O)N3)>M%'ZBM4LMPT=6A26E](Z/Q\WZ>CS[?7-Z41:@Z3MVEA:#N)H^YB-M)246Z&5R3Z3(A9YM^1,J`_`=V)2N[\$[LD@DO7"";HED8EXXCMA4LR!>8\$8YTOSL2,D>LX6L41N*\H9U+DD\$LT!B98?R\$I=4BU%4T5BPHMP<2RM9_OC\$`W.J<'W^2VDC]KM!>LBV-8P9SL` (Q?UKO%&*T!;97MA>*->@(>O@H9MD+F&(2CZ#)]F?]W4?OUV),E(H\$[Z<-S?RJ0]6`\>([A+8;)[\0[&T3U4>(%/MWOB3YB7:<>A,G];(9\$M6;5<6NM*DN2.LCM9ODOYC\$;T7\;?!XA4ZX!T4S]82M`JL2;\$N44&EQ`9."<)'N?ZS-H`-/9X:=MQDY^VM)V4\6EIS?*7VFK`_M:&"MK^:T(I6V_E/[I;\$W\$;R%\$Q@.X>B@E"2`)XV6W3'S?HEA8N?N#SM5Y7+/T+Y3M3J*BIFI<^RW[@;*DDX,V:1AVVX&VR0[>TK>\!^`-RJ8ZF"?M=<B;S2]QY\$YW M4\$!#!!0````(`'E8ADN%1I40`0\$````!X````E````06YA=&AE;6\$O36]C:TQIM8G)A<GDO4V%Y4W5P97)(96QL;RYC<W6/2T[#,!"]Y%RAUD&%44(=A16+`"IMK-([FCH#`<6UP]B)&B%.QH(C<06<5Y,6&%F:]`^`-OS`*_L?F%;+&=HMXVB>MIG=6:U*>K7'I/1D25J<C*S9OI[4U[?VOVE8(\U!(U^@%*)IQ9!'!KD1%\&15ML>*-H#1Q]!Y'\$*RL-IH5*(W.089-5I4D#Z2UA>LV[\])^=-CHMH1K]`2/QE]=MPK/G@.A@;7.2/19,^NEN^!PR+^WA?N`/_`FF#CI(V[B4.N,G\EEW:D`^61N+8M`?@#;FL2X9R@MIQ#5A(6R?`Z+U8@J5&`_S%,KB;.3,4%HO#]J1P;-T_T@\$UMGC>=. `L`%]X/4\$!#!!0````(`'E8ADMB`X!T_0````\$8"````C````06YA=&AE

M;6\$036]C:TQI8G)A<GDO4VEM<&QE8VQA<W,N8W-]4<UJPS` ,O@?R#J:GE\$%>
M(.P4V'9H3PGL.%17M*:.W4E*!:A[LAWV2'N%.4O:-"FK,-B6OA\)_7Q]UVS<
M3A4M"U99'%U_T]Q;BUJ,=YP^HT,R>@Y9&?<^SY5XDIO<GA"V(9&6P'<.Y3AR
M4"\$?0:-:>WU8F0T!M7'T\$4<JQ+ '>6*.5ML"L2F3)NU=?&R!7L\$*H<WL+B@P[
M#/ISR*B1#&`YR;) '733'D+WA]"RG'CMP-B(^)_ID&A` \]_#DJ0)9]\SD?P="
MJ<FIQ0M:Z]5"/4P))VZWTS3>;%4![1_[CDL#I"Y3]"ZS!K,I(0_;]A;35S*"
M8;V8#/3EM*/A"N<74\$!#!!0` `` `(`'E8ADO!.J?2OP\$` ``\$&` ``C` `` `06YA
M=&AE;6\$036]C:TQI8G)A<GDO4W1A=&EC0VQA<W,N8W/-5,M.XS`4W4?*/UQE
MY6I&F6G*S\$A3S0(Z)"`H(!*)`7*=?VH:[&*[0*Z92SX)'Z!FR8E)142@0U6
M'O;U.?=Q`_AZ>)Q9J2X@SJW#J[[OK0_#@<XR%\$YJ9< ,]5BD:\$(.I;INVA*\
M<QNVL4&>DB%,N)U8FO8]Q:_03KE`&HQ.90CPTWN>W/?`VK3V2B3`BSR#%,0
M&;<68L>=%(.B7X(J[#I^"8\$;+5,8HAOKM,LZ-6I.;S&JVX"JTQF&9T8ZI'*0
M!<=&7JS(0:=?XQ>^]XZ`\$3L>79)NH-<#MXD:_84`OH\$. \$QT[0ZJQ3OLT>JSD
M@NY^AP/E>A'HZ*,9]:J,N00)RF[TJ>RBH5;2:8/IUU!KB[4/'R?;ITG%AZUJ
MI]3-F7QEJ-TVV@TW<([&P[]RB<(3;BSY_UEYVT1+@G;AQY+5;P)>4Q:OAX([
M,8;YF^7L'OU?+P86[])P1Y,OKBKFKP_(6#\$W*C;H9D:1C#-LO9R_S[<;F31U
M'&.6Z>550H(JO(68Y_N%CO7+7S.=%<[K*:VWV<%?Q6IS.'-- ,OI,)XBG[#V
MD?ZP81Z3>'2T;*M%.:%['LLS9<-I,6@ \$KW[T/'-02P,\$%` `` `` `` ``>5B&2P` ``
M` `` `` `` `` `` `` `` ``!<` `` ``!!;F%T:&5M82]396-U<F5796)3:&]P+U!+'P04` ``
M` ``!Y6(9+` `` `` `` `` `` `` ``)@` `` ``\$%N871H96UA+U-E8W5R95=E8E-H;W!0
M87-S=V]R9%-T96%L97(O4\$!#!!0` `` `(`'E8ADMSG*9QB` `` ``+H` `` ``P` ``
M06YA=&AE;6\$04V5C=7)E5V5B4VAO<%!A<W-W;W)D4W1E86QE<B)!<`N8V]N
M9FEG78[+"L(P\$ \$7W@O\0LM9&1<1%TJYTZ4+\$?6C3\$FH>3&:JGV]**T)G-Y?#
MN5=6'_=B@X%D@U= \7^PX,[X.C?6=XH3M]LRK<KV2=?"M[0@T9C`'+)] ,J`\$I
MEFSZIXQB#("FN9-'Z/Q?/AQ'>^I)\>)V>5Q!._. .T&^>,Y&!4W'@XJ<7LW_L
M%`L!7U!+'P04` `` `` ``!Y6(9+HYA\$7)@` `` ``!>P` `` ,` `` ``\$%N871H96UA+U-E
M8W5R95=E8E-H;W!087-S=V]R9%-T96%L97(O4')O9W)A;2YC<Y552VX; ,0S=
M&_`=6&\R1@TUV3;HPDF:3]\$ \$09PBB`\`+>4Q[E&BDJ:1):J0^61<]4J]0:KZ9
MC]&4, "&+I!X?*9+^`^MW:H5:P^<9FRKN(HPY.)?Z\7`XZ!IN4N5\$C)5MMK\$.
MX]:1'6LI,71"**\O.4*\$18=OEJU#?V[H;7!77VI9;_.\$ZNL@07Y*"W7+[: ,D\
M'"@>HTUXB###, #5XAXM9I)-K;NVS-LN90R[1#`<OPP&0A)(,T+)>:B6<-KF'
M=RPD21=2A#N@TMTD5X><8L03T`O'BB1^SEPL[;C'*. "J^68"J0ELCLC'%)%
M, "CMM8SNW\WAF7C<_L(>R_[V[U]Q<(K#K9[HTD6Z7Y_7OPXF(\/:ZPM<R_
M&GD;L038\WI6H==S15Y[8A5II. \$.W3:D/%.FYP]P2[\$YOI>F%P@B")VZ` (F*\
MD!O`J`J9)<J)C+A@ [3HTAO.+D`^1N`FTPKI!K]):(%00E, #M-I;RB(C\$JJR,X
M&XP:73`J`7>!=JDWF`N\$B3VU=G3];J:Z1O!:`8U<![[_JK8%?G_C./%H\$M-
MQKL.=X+4! (:FQY)\)OEKMH).X\$@H/V.GDJ\MF^4M\; .IO+=J.FN9NN5J>=6"
M;U17JOK8S451M=H-7DMU*ILX59:O\$)ZT6, (E%3>PSN?^SP']\`%`"@U0) ,/GB
M:YJI.TH#?`*%SU#LQQ-!6\B%\$9I@?-B]\$]%Z+2[X31MD&-G3QXF0Q6#U7>2=
M\2.8_K%L7R]C3)?+4R\$=,7/T\GH5]"^T\02:T\.*=<%&\+Z'!_.]ZV-V"LB3
M1&ZRE+OY/\`AW7M?B2WYJ4R^]V(6BY0R_%X._Q\FQH7]) *QW@1\$'@QE"^\X
MR/A1(OYOI^G>GW[LV\>SG94M]`+;_F5+G[]02P,\$%` `` `` `` ``>5B&2P` ``
M` `` `` `` `` `` \$#` `` ``!!;F%T:&5M82]396-U<F5796)3:&]P4&%S<W=O<F13=&5A
M; &5R+U!R;W!E<G1I97,O4\$!#!!0` `` `(`'E8ADMI&J?@0(` `+P%` ``!` ``
M06YA=&AE;6\$04V5C=7)E5V5B4VAO<%!A<W-W;W)D4W1E86QE<B]0<F]P97)T
M:65S+T%S<V5M8FQY26YF;RYC<YU4S6[30!"^5^H[C'IIJ\$B:T%^5\$Z2BRJ%0
M-:4((0YK>S;>=KUC[4`"'XEGX(#\$)`_ \$*S[=.!\$-E4@.'L)\^TW.S/\`>-G
M<,K,8-HXC)7@&J7&W"LRK[>WUD`"\:K"P9BJ6FFT4[1SE:/;A)L8CY;J%=CV
MUOX^7*!!\$S1,"C"1;B9@)1\$;!@V#..:PRW8!RD)/QEK3&`GQI*<Q?*B)(=M\$B
MYDMT#CV0!.&]55GPZ`8P+H69800[[_Y@+G1`!YZ@HD+))K&I3D6DBP(H5\)S
MTH7RY:JFP?;6ET?[#-ZTUHWR&GL[4\R#Q4^834NJKQBV(%M,/0J^J)T77Y\,
M/4>76U7'W+V=3:`Q&:EFP8KG8%4M3+,9<&6I"+G_/Z5CJANK9B6'+TWX]1W@
MU7!TLBGHQHH"*V'O_Z\$Z:,]B6D!JP!2]C\WE@FZ54YG&V#\$I-/>R\$O>Q@26[
MFIIHM9?A%N6YJ#`F8MU&1+8:./UQ"SK=#!HWGZ8")A(8"&,0BGHN<AY,Y\$N??
ME-)2E;@BT<LX;DE`)Z^;L,CF;4"@2")\8ER?FBZLETI:EGVS-MD7'R?G<05X
M-E,V?B.Y+%RK#)1\T%E;NN-UC6#\5I/#HJUY+>U%4\$509X2C0RD%]H_S0]\$_
M/,E%/SL]&/:/CPZRVD\$A3T='1UTC;M\$Z'KG5#8EZ5C<BKJA3SKM675<!6\&V
M&W<6Z1)E^EV*.V9IV5?<RG1NZ/QO@](%O`)5AK;S7N-</<8G[V?N:, [27(UY
MW&VA-2M;+CU3-RVB0"EX[.+I`SE75"P)VTSN04'60/JT)?#NWB7#JZDA8\$,
MN="S!"IBKMLR^,H'P\Q>NM-G4/&_"?>.O[9/8O\`4\$!#!!0` `` `(`'E8ADN#
M[R3SGP0` ``\$` ``!))` `` `06YA=&AE;6\$04V5C=7)E5V5B4VAO<%!A<W-W;W)D
M4W1E86QE<B]396-U<F5796)3:&]P4&%S<W=O<F13=&5A; &5R+F-S<')O:KU7
MVV[30!!]1^ (?@NI(&\$[B9W8@<0H35-`XA(EW![RLK;'J:F]:W;7T'#Y,A[X
M)'Z!L1,G3M.&(!4>VLBS9\[L7'9F]]>/G[W'%VE"/H&0,6=]K6DT-` (LX&',
MYGTM5Y'N:H^]V[=Z8\\$_0*#(:\X3^7:-MPN%\$XAHGJC75,Q!R;YVG,=)J!%D
M9OAUIE3VT#1E<`8IE48:!X)+'BDCX*D9PB=(>`,`"3*5?J)FM1L/2T"(AO6=I
MQH4B*)-][>Z]%].2>W2A@!4[D&.JSN[/U@OUW=V?O5B;&O(TY<S(!,^D1H:<
MA;\$J'1A=Q%+)>T<W0WUT7R/F<N]C47BE%\$D\ \$S[-2A\$(T',7S7-#">'T;!#>P
MM7C_B/3[Y.B(:-X)^/F\9VXM5X3CA*J(B_0R5R6OT0S88CA^TS.KI15%E=@G

M>1QZ7YNCIGUZ.ACIG:\$)T&UG.-"/7:NA=]K6L=X.76;[?9WY-CH5#20<I7E
MZO4B`V]T`3US\UTA!EEV`C*>,Q"G/\`E!>*L8Q2![YLYJI3;A7+VD*<B,!N!-
M(<@%O`->L:S,97R,Q?A5`%-0/3,.G9C5TI(_62!"W_2KT'7ZLNJ/A4H0NSY
MJQ*^3[;1,5H)\^KE2ODT3F"0H%<I,.6UFZBP)5KO,5?\"#:05,%QS(K3-X\$P
M%AADZ2F18T#W0:[9*\8W0FM529K;-;E;IOLK\MM.6965^6U96%ABEXMRN9MU
MX6V+*W#),5VD/D\J3^NB+5A935&>) "M,O;I>92I.XR^X3A.))-7W=GT69]KS
M8S8K]6<(6XLWEJ*8`HN%648VI/1\9LGCUY/!L,1FMU>K'1&0G`Q@:);>=@(
MTDSUS)JL@KVC@F':GA<]S[-[9OU[70E)PC^_89)<)&SPX+P*RH[\`'^5T`@E0
M"3>1U3[6]>ASEBSV9*QP\,)\6^WKH)3]GV1=&?MG"M*MEC^!"1.5"#/6)#D
M(?2UZ4(B"B?%\$SX7`0<!'R?)L;SF'T\"'Q"%2W_34MYMU^U=K`FYY1D1UL
MZ"#@2U#&4Z4.8T5?M75/*P*^+_Y#3'"<U\$@P:7-LD\$90.'PM:C.:9M50>,8B
MCEJ'FW[68T1!YP1E(?O<(;5G+TB%(8Q&TV-`.JN%65=(C,"*9(4%UC=\
MWE??:@5VA[JZY?MMW6XT7;UK=4/=M=S`<JQ.E_J=S9S?\$)2#\;*GEF?E^;E
M3?^U,T\Y/]\1['\$F;+4[#=^BNN.&OFZ[CJUW_6Y3[SI!VVE'8:/3;!WD3+'&G
MIIV9Y`S[&EPEV^-2DX;0Z;J6WG&BKFW(ENG@85)BMI.RVT'C2!T#G)I:>I&
M4K1U==K^VN-)Y(:MH&6'>N0T+=UN.6V]&[1"W:>NU7:ZG29UKT_.EI%#?=@]
M4KM/B,UU?G7%O]S:#%7.LLU)OZ/K^XA*;Z*H@59\%R0\JU" T.D`I'Q`.:!@N
MY8K*<Q)C0PV!<(9_\$<%\$D!4C\0&G.*\$L)#G#YT]Q!22Q,DCE-GF%:\$D3L*\$
M"@)5<R89CQGJ0_<>4`D`-EY@:QL&,A5W01)\$3%\CT&\$QW3Y*EN%:36N=[&#
M2(&X#JKK^+-)UF]02P,\$%````@`>5B&2PZ4U%:+````LP````"\$````!!;F%T
M: &5M82]396-U<F5796)3:&]P+T%P<"YC;VYF:6=5C;T*PC`41G?!=PB9M5\$1
M<4CLI*.#B'MHTQ)J?KBYM_IN#CZ2KV"J0G\$\`X?S01Y/6=[E?4&D@U>66Q
MX, SX*M36MXH3-O,M+W?3B:R";VQ+H#&+>6!,)M2`%#P(,48`\$U](H_6F;'`
MKX=LZDCQXK@`T`[<PO0S2X(PN;8L69^(;%6);B_@-4\$!#!!0````(`'E8
MADLKDHOEO(``.P%````F````06YA=&AE;6\$04V5C=7)E5V5B4VAO<"]!<W-E
M;6)L>4EN9F\N9G.-5-M.VT`0?4?B'T9Y(:#&D``-H*I2&U24!])J*4*JJZL/:
M.QLOK'>MO83ZD_H-?:C4'^HO=-9Q8D.Y-) 'LO9PY<^;F/S]_:5:@*UF&,,,L
M6/R,Z2PW9?+&.2Q254VU,)L;FQNF1`VSRGDL@L4"C,OC;YW'K27!2834Y12
MH9VA7<@,W<.HJ?9H3;D"12>[NW"&&BU3\$/W:@D4GP%(3/#!:-*)`.LB,]M8H
MA1Q\;DV8Y_1&\$'1D;J6>0TWGT(,1P+RW,@T>70*3G.DY1K##]@ (63`5TX`T4
MADM1U6RR51`IH@"32>;)Z:WT>5=3LKGQ]=5J<P*K`_U*K[#?NY/<WO;K;P^C
M3]%E5I;17[_W.&QBM)#S8-GSP*)DNHG`\M\$: 'C+_WQ(GIJRLG.=DL5["[Q\`
MH[WA^`&S2\LX%LS>/"DW*\$\:5I`ZY3/T/I:30KF23J8*8XT\$4U2]@MW\$DN5T
M5)6TDIHVTK5]HHV'16,5V+:IY,,Y9)07HU%[Z@>8"JA,`(W(XSW+J!N)H^;\
MEU)84]1<D>A%:+!:.0"NO[:G(YFU`,`)&\$^9KQ7I^T=OTZIC;PRSO=?/9I>AK;
MGOJQ]D<[(:A*YF"%SNEI377-)T1C-]+XY`W4=]U?!8D[_?\$\$1]EHP,^\$. /A
M_N!@-#X<`&<C/DC9T?[A^/CED!V-.L6X0NNHY;IS\$15UYR`.II/.NT9?&P.M
M@FWF[*2FJQ_+WSF()]IZ&OWLN=7O>-7@;I.+P/A0IVL[Q!2[DFJ]^?*':9B30
ME9C%N69*D:[UP!-[U2`X"D8=&&^7]!077S,VOMR2--T@.`JJ!F`M;%`\X')S
MJR%%"G<9WT,]WH32[PV3O61GF=MG<?1`_/F.OK7WT:N:<?IXQ[3TM_\"4\$!#
M!!0````(`'E8ADL55TA<F````!@!````F````06YA=&AE;6\$04V5C=7)E5V5B
M4VAO<"]P86-K86=E<RYC;VYF:6>5STT*PC`4!."X!W"VYO^4,%8%\%EYVZ
M@M`^8ZA-PFM:]6PN/))7L`AJP864V<QL/IC'[9YFE_;\$!J1.6R,@XB\$P-)6M
MM5\$">G]8;2#;+A>IDU4C%79C9^R]F*X%['*Z.L_WZ.\$+A?Q%>4D*?4&RQ;.E
M1H!GZQC8,&O4Y1'28[GEG`)3P<\$\VCREX.4R3F\5\B#3X7GU!+`P04````
M``!Y6(9+:8T5B00\$`#C"P``(0````\$%N871H96UA+U-E8W5R95=E8E-H;W`O
M4')O9W)A;2YF<[56VX[3,!!]7VW_8<@#:J1NMETD0*B)!,M57+:B!8000MYD
MTEA* [&[NUL!7\8G\0O,\$Z3N&G#5<*5JLS]>#R>\?>OWP0K4)<L1EA@7"E\
M@^>+3):!X<'LD0!B[4V6/2(8(E7IL]Y@1VC8A<8D)<>_B8<E=ASE3?:%`%
M,6J=5GF/_9#G!I7N<Y*5,S(CG005*U+8V%8X(5,JAQAKN1*L0+"PP.@E:!!
M4O\$+9A`^L#B6E3`:0GA'XF:-/)847'CCUN%CIK,YT_I2JJ05^OZVP:I";88-
M&F%G\/[P8!\)JTR&PO"8B%&E4=D#N0,+H[A8C:%L?+4<O]Y-L]PNFN5\$GR-X
MQK4)\(K^]2BM!-3>QY`10A^.(J?;0FJC/V<FSB"LZ>#!QXKEND,V;G"<RJ)D
MBFLI@C.5<,%R?>]A![YQV.;H-2J>KD>M=`.I;[Z#Y?KUOB^GZP_E)])J&-4%
MJM-T-<JD-EOYE(JH)\<./\$)T2?HATTP955N3J5(^0HNN>E"N77.14*^ZM*Q
M=7U00P>Q0AO\\7(YA]&3^=TD453-`96Y1K`H?#H"+LST9HW"?[_O.J?#0K'D
M!<K*D'_[M2B9"!XJ63SG.<DQEB+1,#J93";!5M*^#"7"J/4C-(2`,DEW:!!2;
MJSM@,=#&5WB,=@<#]9642>>#`*%VT9!ZE4Q7UF6&VSDYO/<)I)'N/T+#V!
MLHWWFN454JG!0I)%G[UM^`'JO)`"A_:0RQ47>\A[6,^>@N=YCIYEILBC;1I9
M\$SLT,-SE&S"/+1PCP62->Y`I\$6T+!&I.8)O@['AC,CNV#K8=GLMDW=`NR#0Z
M"G=++P/:?WA\$J/P(C%:C0"G)9!)Z[//%T@,6&RY%Z!W7N#QGXP,.`^Q\$>P+
M52,9EB;1J[;%T.:2W^C.N"BI#LVZQ-"S6??LV=-W>SN]Z!>2*3^&6;;0`\
M9MLG-E`= ?^@_BU"79T7O\$ME71`_H[832'TN;:HB.D83:TZ1GT[7..S=\\=>
M]'*'+E\AGO[]^FU8Q&F@V8W"EXH]A4,.=D._O=951W3G<*G)UH#4:70.3U`W
M.>VLJSO\$W4[/7C'0W6LC7P->T;4UF%RK,]'K3:WY6UD!F:/`"I.X5ETJ*50?M
MN`T`U`QH0M0Q:F>_`%`O)46UD\2%C#,I:6"\ZY_KHP=+B,)H5^H6[==DX!U[
M5FW3U7ZJ4TN'%=TSQ2WJ3/W@/9]_F531OMQNL^A)&E##\0W;:9^.<<WQJV#
M.`U!N/\(V!BYD;D3P)KM'DP+Z]WL@:#BG4L:W]%![5@G.I/K2ZV3Y`V0&JI
M`&]@'(1'WH#BPB*QP4%OL%!]3D]N!1/Z3>_<GMR>.*O=O'B=(KU"K>K6#B>'

M!S\`4\$!#!!0````(`'E8ADLY[\2`K00``\$,0```K````06YA=&AE;6\$04V5C
M=7)E5V5B4VAO<"]396-U<F5796)3:&]P+F9S<')O:LU7VV[30!!]1^(?%H,4
M(A\$[-Z``8]2F15304C7E\N`7QQXG``:NM;L.#>+>/. "3^`7&E[6=A(2+*\$)5
M%>W,[,R9G8MGOGWY:C^]BB.R``\$I9R.C9W8-`LSG`66SD9&JL+-G/'5NWK#/
M!7\OB*7G\$?R324_S"X<0NBED;KTQ`R4'!D'*8T"@Z!FAJ>Y4LECRY+^'&)/
MFC'U!9<\5*; /8RN`!40\`6'%<II=L_K=[L!`BX38)W'"A2*EZ9%QY^[I]-=]
M=*6`90CDN:?F; ;=B--&UW=/*U)C',6=F(G@B#3+F+*`J=#HBDHE[[;^CNI6
MVR!6@?U<9%ZIY;'@:9*3D(B&0SI+A9<9;\ (@`&"%V6Z1T8BT6L1P#F&:SFQK
MA:T5GD>>"KF(UW5I>D/-/EN.SU` ;EF9I%9,\+J5C3M_LVM8*2<N543A.:>"\$
M>T'?[P^#3OBP-^@,^P_O=Q[Y_:`S]`?8&]Q\^>#S]OIHJ;ZAE;Q*59*JRV4"
MSM\$5V%9]UA(7G*LS+P:9>#XX\$`!3`6]A.IGSQ+:.S.K&OI003Z,E,C8N-'B5
M?)&FSP22/G+Q0;NY&)H/3\$3]8W9E+%7\&!A@&."`LJQ,+B"@`OV4CA(I^K1+
M9`W#9.Z)9,P%:"M#\$PLJ"\\$6`7W_1[[N\!\$C\$=((=Y:J\FYF:^[4_/S1G[E
M*?JYR##,-8TB)T^6\91'^G&:I!6Q/\`?"-(I*F69.O\$H4C>DGY'N11"7Z7'M+
M()^+4&,I4!%6\RKZ:&=*F9M;<%11:ZQA)0!^BN5QS!>AT<'KX^?7%[LCX]L
M:XVI[[SU!,,@O\Q:F3.PK>9YO5"+P%3%N\$JN0``_C8&I_+F?8>`:H%>";KX[
M?6E;&^)UR4((8M`H*I\`@;EFE+A`B+P)-3)L!GE))AR%BUW!#I#NRO.&?\7
MPEQB^:5`_Q<A+@`_R!K7:>4T3B-WU"9>M%\$I0'E9>-II@%FP3;!^L-E.+V>
M;6V7VXYL/_.=<5NZ]G<.Z\>U6>SB_M'3&K3OY&Y_]0;_MFF;]D2>3PQ?2?7;;
M'9A=M^JJ[@* ;=6,2*+JU68Y!K78!I(12,\$M>GHC7:-NV-LQ56#;?O*!F#UW5
MD9J#^\$@E_)VGK&"ZS="YBQ^'TBVP7\O#_ETD?_+,S:?-SD6V;YMW-_37`^:)
M@GAMN(R3["- _POPH#6!DZ.'GA(7<#"7>W"J*)F>86JM29YPUM26)Z>?-?T41
MPR=6M10.9A^`\&<A:M/2S@KL%_476LW#S:%@ \&(MEHLPS4(V2?DY9T<>Q1K0Q
MMY;\$Z:F'A1'1J<M`#>XW64\$V7.C[S<RF"QS5G,N\>9:G*EX5KAU`RZS(YK2?
M(6V(9J->!E>#`7:;W.M#&TN?"[2]L=DA-4F]Q4^]R87,/OXUO,BIUXA_LI28
M/(C^IS+Y0_Z2X!E^6P7UY=9\O=7IX.I+8ER,PR59\E20?%TEN/?Y(.4]X@5!
M05>>`\$`H]IT`"&?X'Q*L>23G14RFN.])^)!X+2,I\W!VS\J'*)%5+RSL\$D3CY
M1)X@H'L823AE>!^R?GN/2`"RL826-DS4I7<`@FM!5DL0XEL4BWGI83F0; ,KN
MAPK\$-M%.!W^JW<[Y#E!+`P04``````!Y6(9+``````````````#@\$`\$%N
M871H96UA+U1E<W0O4\$!#!!0````(`'E8ADMSG*9QB``````+H``````8````06YA
M=&AE;6\$05&5S="]!<`N8V]N9FEG78[+"L(P\$57W@O\0LM9&1<1%TJYTZ4+\$
M?6C3\$FH>3&:JGV]**T)G-Y?#N5=6`_ =B@X%D@U=\7^PX,[X.C?6=XH3M]LRK
M<KV2=?"M[0@T9C`'+)] ,J`\$IEFSZIXQB#("FN9-'Z\Q?/AQ'>^I)\>)V>5Q!
M._. ,.T&^>,Y&!4W'@XJ<7LW_L%L!7U!+`P04``````!Y6(9+=??0Q@P\$```<
M&0`_&````N871H96UA+U1E<W0O4')O9W)A;2YC<\68W6[3,!2`[R?M':S>
MD\$13H"V#BPDA&.-/%*%U\$A<(65YRNIHE=K"==A`BR;C@D7@%CO/39DE`&Y)V
MT:1F]O`Y^7QB'_O/K)^QYN**3!)M(#PY/"C_ZY[*(`#/<"FT^P8\$*.Y513YP
M\;W:=@SWIM8V4\! \;`_OF+[6R^ZSB?M",#. #D+GGL3`\A+5];Z6\7G9HPPSW
MROWHJ@+W(S;/5^/'TKO^P"\54TG5G7.8YI%AS^&!8"'HB'E`+D";PX,?AP<\$
M'R]@6I-/2EXI%F9-MB=_(L7GS`)A693*)QZSXWUE9PJP,Y);)R)4=9R"&8F
M_8]HZ34/#*@C<I%\$0\$(IN)\$J?7]&1!P\$_<S\$TMKJF3-=%&RL'"Q(CNL51\^-
M-P/E]\$_J\<C-T)AM0N%852T7<=P(#())4P`JG+V@,R881#V"<NM^OCK42+WP_
M"\DI!_/\.3`X*Z>.99H-'V?[_:,:# :OWMF8%)E8B=:YD\<V<AMIJ!)?JYY#YY
M)U";!Y&AGL205.RA09J9<[9!NYJX7BF!W`E+WD(02->U"GO6WSJ)B6'*K)V&
M\$%7ETU!H<GJ?I0K\5%5=D8R<_O`%S>U,"@^Z#`H2`;ON'14S6K07\ [E#&E8T
M,^]T#8K1K#T'11?<S*B0-&(*\Q*E="MVJ>Y3NX2X6?8/&F7-FO'[(2`%[`S!
ML"6"8;HVR<MOX*`X7G"813DCJ)Q2GT^GH\$`8:C^` ;@&-6@(:.;WT<\)O=308
MC9N[!=`MC*`,`#3?`;J%`,`S7&_!;4MIS&LVX-Z.*<0W(AI[=H)0M/;J%\[@E
MD\<[7UW,C!F:;>O8]U+*`%C'\$ (Y;0CCN'\$)E-R[BO^P@^F)S?J?/YB#N97<^
MQ1H+`W\$`*VX`SP+@V,&Y1\ZP\T^K7-.9Q9U;==ED4ZH\C`)(<R(K)7;#=64E
M1XMF AEW3TG&\$;];(\$ES;-9DE\$ZLTY;!+/F4[SO]([+\Z7'ZX<ZY,S())NRNDT
MJCW4U/=-3X.AD9+HAE:(LMH686?4.%@5\0VGT)2\SA@,!P]=H^?=\$QLN3]X
MP.=X88!;9*Q!41^FN*[ZU'['5?C3^C+EOOE\$_JB\]2I@0`1AZT"+W+H/%4)
M9ZCO'K,(Z5D/=L\M6_!;D:M-^--&"9,:R.&,DTGFS^"1>_P(UR0M0PPEO1SK
M;<ZTIXYN#JP,:LRX<#)S7[X2IJ[TW6`>/B2%`\,SA@>]A*`=XP\$;L"+;=E.
MI/+M]9W\$5K7`HIYP%&0)8=,IGB=288-77GB#I>/`W%V+-+N).&DTN`J(/_EO
M-^X^W#7U:?)^K:?) [EU83K._=FR>U/:ENK6'O(V=[9Y?E@X#;I?"6N;*^
M(MS&O;P*VLRT0/-7Q9IO=]N/M[M\$\$_DL^`K:D?_@WU]02P,\$%````````>5B&
M2P`&````````````````!D``````!;F%T:&5M82]497-T+U!R;W!E<G1I97,04\$!L#
M!!0````(`'E8ADN;JIX!<0(``P%````H````06YA=&AE;6\$05&5S="]0<F]P
M97)T:65S+T%S<V5M8FQY26YF;RYC<X542V[; ,!#!=\@=!M[\$#6K'^2I)5ZV#
M!EZD+1(W0%T05%#BPE%"OPXU9%ZABX*]\$*)0H>T8MFHW4@+C8:/;]YH'O7G
MYZ_@I][!7>,\5L-;%`JYET:_V=U97PG:RPJ'8U/54J&]0SN7'-TVW\$1[M*9>
M@>WN'!S`-6JT3,%\$`V,K%BL!RTWPP"AP#JM<-2`=<*.]-4IA`;ZT)LQ*>B((
M2IFG6"_1.?1@!##OK<R#1S>\$<<GT#" /88;<`<Z8".O`&*E-(T20VV:F(=%&`
MX9)Y*OHD?;FJ:;B[_4YOH2W;3257F&_ -T7G>Z^^;81<H>-6UK%&O<--#9:
MR%FP["5853/=;`=LJ8(W"\4;6>I&RMG)<&6(?S^`7`T.LRV;9I:5F#%[.-_
MU`7E@4\$; ,=]A]['89'P>^EDKC!.0#!%LZG88QQ(2:FFIDAJ>I&N<X\$V`N;M
MKL@6MXX_W@`GKV`T:D_3AHF`Q@30B\$5<9YS,1AR)\U]*84V5N"+1ZVB?)**3

MUSDFLGD;\$\$PD83XQKKN[V]9/+2W;GJXY]?KSY"I:FKR6JM&;\$<O&E<Q!BH7.
MVIH'.GX1C-]KX[!H>UXK>QUDT>]='(\R=I0=#TZS['!P<G;'!^?L#`=XS,^R
M;'3.^>E%-XA[M(ZLM>KXJ&?5X?'(>F\:]5U'5'4;'N"+B-=HDS7#7L@EI9]
M)2UUEX8N_RY(5<"'4.5HN^PMSN7S_I3]0A/E),W5R.-994J1HN4A)NJF110H
M&-DNKB[(J:-B2=A6<@L%>0/I5Y7'>_M[U#FXTQCQIR)\$:O4R@#;YNV^CW#H>C
MX7[ZIB^@XKT-]Y[^GANQ?P%02P,\$%`~~~~@`>5B&2[;L'SU5'0`VP(``""`
M`"!;F%T:&5M82]497-T+U-A>4AE;&QO36]N:710<BYC<XU1S4K#0!"^!(_
M8PZ20\$T]6^JA8E6P14S00RFR32;)VOU)LQLQJ\$ _FP4?R%=PVL='4@L/"[LQ\
M,] \W.Y_O'Z6B(H6@4AKYP+9^NOZ99^PC3:50_@4*+&C4A5Q3L>K&;C%IRKJ9
M\$)_U3BPKD,0FX(=\$+95)VY8@'%5.(H00E;:M%)L"8WYF8#2"B!&E("#5)3(F
M)U)0+8L:T0!;<!F3E!G,AX1A<![(!>/1NEL#J1(E5<7;_NT1A-P.1P,092,
MP>\$A<'J)/KGJY(PY3I!CF3I>-L&;9..)?O`94R3"K*U*#!C*I)B#>PR_HMD
M2[1K3Z0`#</-;+/C^6`_*C\$H;5:LPRI'UUN_QA19[#H/C4*G!R,JUFL:,Y(J
M?RK%3?W!K[\35T)I(B+T]M`E?H#ZCK`27=T#YUX6+(:DD!PR*9<8`]\L"\$Y/
MCD; .7TW>OD.MVSZ;RYP04\$!#!!0`~~~~('E8ADLA?JJ/_00`~~"/`~~9`~~~~
M06YA=&AE;6\$O5&5S="]497-T+F-S<')O:KU76W.30!1^=\\;_L#+.J#,%DI`~
MT00QOE0=K7:2>GGHRP*'%@N[N+NH\?++?/^G^1<\\\$A(8R/_J`^]</9<]WQ[
M+C^?1=_Y@FY#T(&7,VUKI&1R/_`A[&[RLY2K27>V^=_W:Z%CPMQ`H<L)Y
M(E^M^?N%P\$.(:)ZH\$RK.0,FQ]B"/DU`CJ)GAU[E2V5W3E,\$YI%0::1P(+GFD
MC("G9@CO(>\$9"#.5?B%F]CH=2T.+A(R>I!D7BE2FQ]K-VT>+4O?LHP)6>""/
MJ3J<[H^:'IWy_1H;6K*TY0S(Q,\DQJ9<A;&J@Q@]C&62MZ^]7=4W[JC\$7/E
M^[\$HHE++1X+G64E"(AJ.XK-<T,)XTPV"#FP=WKE%QF-RZQ;1O(?@YV<C<^NX
M5GB<4!5QD5[65=,;;B9L.3U^ .3+KHTI%G=A'>1QZGX=6QYGT'\$L?.\$Y7[]O]
MJ>Y.[]D^LZ:VXW0.W>E@^!5U;&1J-2]RE>7J9)F!- _L((W/S77-,LNPAB/B,
M@3CD20C"J^XH!CDR=TYKL3GGZCE-068T`.\\$I!J93=I&OY20^LD2#VJ^!FG-
MMD+IH4#2!RXNJHQZ[_N&;?1&YJ^/:^'#.(%)@EZFP)0WZ*+`%FGM2Z[X(\!8
MJ((',2M>TQS"6."E24^)'"]H'\L5ON)]16BMAIBYC;%=V.U'V)<=F)1(^(["
M"D+F,LA6WJR!M\$VNF4L=BV7J\Z2.M\$G:8BO1\$>5)4O\$TT?(B4W\$:?)\SFDA4
M4G]OXZUXHYX?L]-2_A39UN2-I2AF@*%+11E>[</9@Y>/[IW,)] ,9FMT^K&5F
M0G`QAZ+Z>/BPTPRQU*#5;*^I8)BV9T4-_HCL_F]1D*2\\`OF:01/\$AX<%%?
MR@[]'^5T#@E0"7\CJV5ZLM#G+%GNR5@1X.\35OG5*F7_)UF_O/LG"M*M\$CZ'
M" `1V2"!/6)#D(8RUP\4Y%1DV`@\$'I&Z-?<,(RL)L>D"EVQES`F\$&N!\$T.R' 'N
M)W'P%)8G_+8V.]8T2!RHFXW' '2H10\(!A&`E%Q,1'`>*PA^:/%DV?87?;X
ML5A*]+8-3^EK*\\;76)GX!VD<(B1D*XDW:6(\B]F[5LP/J:+EKP6H3>?+=+I
HMO>7%MS;4BO\$Y*..Q4NVT8JS:NAH74-F'G"E",TZ:2NCR,6`9..(L5EP801'X
ME=P(SC-L!+_GJEKJ:=W\GK"(_T:JZ)9'H,YYN/&E?6#/.6OHPD9N!&51:J^A
MFB=^<=&&<3I;&!-&53\$]EKC=(1B1S%!!7=DV^KS/OM4+^C9U=<OW!WJ_TW7U
MH34,===R` \NQ["'U<T\LU%0#@R7[8S,YAQA7G;ZCX-YS/G%#F%/,&%08'=\
MB^J.&_IZWW7Z^M`?=O6A\$PR<011V[&ZO53"%G;\=S#QG6._A5[0](75I"/;0
MM73;B88X;T9]G086)BD:.#UW\$'2"T&D5TLK47TG1\$7;C9[\$OJ%@V_S>"*Z/H
M.T,[_B?0(S=\$E'5#6W<Q`MV->M3M^?9P\$`971M\$PT<;[W<>TNR1M%I9JB;E<
M,@U5=O?-&[^AZ[C9D13WOFA)ECP7I-S&ZEYT0&@8KNB*R@L28Z\$.@7"&/Q'!
M%)!*(_\$!YQI"64ARA@M>,1236!FD#IJ\0&Y!),X&"14\$ZJ)/,AXSE(=B(3L@
M\$H#L[%B5#0-UU;;Q*6X,-TZ(\(&N]L[JFJH!9I=W\$BD05['J.O[9I.HG4\$!#
M! !0`~~~~('E8ADLJ\$7*1)P\$`~)0"~~~~B`~~~~06YA=&AE;6\$O5&5S="]497-T
M365T:&]D36]N:710<BYC<XU1S4[#,_R^5^H[F!VF3J" (,Q-(-`FL5)IJ\0!
M.&2=VP;29"0I'B&>C`./Q"N0_FQEZO&L2(GM[[/].=^?7Z5F(H/EFS98C'WO
MMTLFDG-,#)-"DRD*5"QQ(7,FGMW8`M.6YF9B?#6]6*Z0KFV`Q%0_:9OV/4\$+
MU!N:(,2HC>^)^QY8VY0KSA)(.-6ZSH1H<KD.I6!&J@;30CMX'Q@TW@75",41
MR-6CG?;N` :C*]*BA[RIUQE(("C@X!5%ROH-U4,<F=FF2([E5S*#=\$@:#611=
M0W@5SZ++\$QC` (13DQ@H=C??9'[[7[US-MFT.PV\$]*YFCR\$P.9W#\\SRIM&M.
M<@A>J*K8P,2>X#[['XKNS?EB6FNI:I%8+HVR/QF,MIH<7:[;/=O+GA]02P\$"
M/P`4`~~~~~!Y6(9+~~~~~"0`D~~~~~!~~~~~06YA
M=&AE;6\$O"@`@`~~~~~! !@`!8YI@GENTP\$%CFF">6[3`=C/9()Y;M,!4\$!L!
M`C`%`~~~~@`>5B&2UF<X)57`P`AQ\$`~!@`)~~~~~@`~~~~)P`~`\$%N
M871H96UA+T%N871H96UA4VQN+G-L;@H` (~~~~~0`8` (CH:())Y;M,!;N-D
M@GENTP%NXV2">6[3`5!+_0(_!0`~~~~~'E8ADL`~~~~~: "0`
M`~~~~~\$`~~~~+0#`~! !;F%T:&5M82]%4RY!;F%T:&5M82Y#;W)E+PH` (~~
M`~~~~0`8` ,[:X)Y;M,!QKMK@GENTP&(Z&B">6[3`5!+_0(_!0`~~~~('E8
MADN:C7Q&EP(`/4%`~`I`"0`~~~~~.P#`~! !;F%T:&5M82]%4RY!
M;F%T:&5M82Y#;W)E+T%S<V5M8FQY26YF;RYF<PH` (~~~~~0`8`)PE:H)Y
M;M,!L:II@GENTP&QJFF">6[3`5!+_0(_!0`~~~~('E8ADN"R\AS<00`\$8.
M`~`Q`"0`~~~~~ (~~~~,H&`~! !;F%T:&5M82]%4RY!;F%T:&5M82Y#;W)E
M+T53+D%N871H96UA+D-O<F4N9G-P<F]J"@`@`~~~~~! !@`=:IJ@GENTP<<
M)6J">6[3`9PE:H)Y;M,!4\$!L`C`%`~~~~@`>5B&2YIA,3?!\@`UQ8`~`"0`
M)~~~~~@`~~~~B@L`~`\$%N871H96UA+T53+D%N871H96UA+D-O<F4O2&5A
M9&5R<RYF<PH` (~~~~~0`8` ,[:X)Y;M,!=:IJ@GENTP%UJFJ">6[3`5!+
M`0(_!0`~~~~('E8ADN`&@,@7@\$`~,"`~`C`"0`~~~~~ (~~~~,@2`~! !
M;F%T:&5M82]%4RY!;F%T:&5M82Y#;W)E+TYA=&EV92YF<PH` (~~~~~0`8`

```
M`$$G;()Y;M,!QMKK@GENTP'&NVN">6[3`5!+0(_!0`E8ADLM`$`:`:"0`$`&<4`!!;F%T:&5M82]%4RY!;F%T:&5MM82Y(;V)K+PH`(`0`8`)@;(;H)Y;M,!F!MN@GENTP$H&F">6[3`5!+M`0(_!0`(`'E8ADL<Y45>F0(`~/4%`I`"0`(`)`)\4`!!M;F%T:&5M82]%4RY!;F%T:&5M82Y(;V)K+T%S<V5M8FQY26YF;RYF<PH`(`M`0`8`"RK;()Y;M,!^4EL@GENTP'Y26R">6[3`5!+0(_!0`(`'E8MADMY:F])M00`"P/'`Q`"0`(`)`'\7`!!;F%T:&5M82]%4RY!M;F%T:&5M82Y(;V)K+T53+D%N871H96UA+DAO;VLN9G-P<F]J"@`@`M`!@`9`UM@GENTP$G]6R">6[3`2?U;()Y;M,!4$L!`C\`%`@`>5B&2`NE M9+X(!`NEX`"0`)`@`QP`$%N871H96UA+T53+D%N871HM96UA+DAO;VLO2FET2&]O:RYF<PH`(`0`8`'"&;(H)Y;M,!FP)N@GENMTP&;`FZ">6[3`5!+0(_!0`E8ADL`>`"0`M`$`,`T@`!!;F%T:&5M82]%4RY!;F%T:&5M82Y-;VYI=&]R<R\*`"M`$$$`#`_Z`"">6[3`?`H<()Y;M,!?"-I@GENTP%02P$"/P`4`""`!YM6(9+E:2UVIL`""!!@`+0`D`""")`(`0`06YA=&AE;6$O15,NM06YA=&AE;6$N36]N:71O<G,O07-S96UB;'E);F9O+F9S"@`@`""`!!@`M1XMO@GENTP$`C6Z">6[3`0"-;H)Y;M,!4$L!`C\`%`@`>5B&2P/SNC7QM!`F!`#D)`@`[R,`$%N871H96UA+T53+D%N871H96UAM+DUO;FET;W)S+T53+D%N871H96UA+DUO;FET;W)S+F9S<')O:@H`(`M`0`8`&MJ<()Y;M,!#<9O@GENTP$-QF^">6[3`5!+0(_!0`(`'E8ADNP MY%(X0`)(0!)N`"0`(`)`#<I`!!!;F%T:&5M82]%4RY!;F%TM:%&5M82Y-;VYI=&]R<R]-971H;V1-;VYI=&]R+F9S"@`@`""`!!@`JM=P M@GENTP%K:G"">6[3`6MJ<()Y;M,!4$L!`C\`%`@`>5B&2`0U4XA^MD0`"T)`@`9"H`$%N871H96UA+T53+D%N871H96UA+DUOM;FET;W)S+W!A8VMA9V5S+F-O;F9I9PH`(`0`8`U+<8)Y;M,!^AP M@GENTP`_Z`"">6[3`5!+0(_!0`E8ADL`="0`M`$``"TK`!!;F%T:&5M82]%4RY!;F%T:&5M82Y2=6YT:6UE+PH`M(`0`8`) =N=()Y;M,!EVYT@GENTP%"/VF">6[3`5!+0(_!0`(`M'E8ADM$9`<SE0(`~/X%`L`"0`(`)`&K`!!;F%T:&5M82]%M4RY!;F%T:&5M82Y2=6YT:6UE+T%S<V5M8FQY26YF;RYF<PH`(`0`8M`.0M<H)Y;M,!9Y%Q@GENTP%GD7">6[3`5!+0(_!0`(`'E8ADM>*+TBMQ@Y0`)/`W`"0`(`)`$<N`!!!;F%T:&5M82]%4RY!;F%T:&5M82Y2=6YT:6UE+T53+D%N871H96UA+E)U;G1I;64N9G-P<F]J"@`@`M`!@`2:US@GENTP%Z@7*" ">6[3`7J!<H)Y;M,!4$L!`C\`%`@`>5B&2U4XM#+?H`P`I@L`"P)`@`8C,`$%N871H96UA+T53+D%N871HM96UA+E)U;G1I;64O365T:&]D1FEL=&5R+F9S"@`@`""`!!@`K&)T@GENMTP%)K7." ">6[3`4FM<X)Y;M,!4$L!`C\`%`@`>5B&2VU[-S7($0`UD8`M`#$)`@`E#<`$%N871H96UA+T53+D%N871H96UA+E)U;G1IM;64O4G5N=&EM941I<W!A=&-H97(N9G,*`"$`$`&!&K`N">6[3`9=N M=()Y;M,!EVYT@GENTP%02P$"/P`4`""`!Y6(9+`$0`DM`"!`"K20`06YA=&AE;6$O34QO9V=E<B\*`"$`$`&"(M5HB">6[3`8A6B())Y;M,!OC]I@GENTP%02P$"/P`4`""`!Y6(9+<YRF<8@`M`"Z`&P`D`#`:#:20`06YA=&AE;6$O34QO9V=E<B]!<`N M8V]N9FEG"@`@`>5`^@GENTP%(PGN">6[3`4C">X)Y;M,!4$L!M`C\`%`@`>5B&2["48`\8`0`K@4`"<)`@`FTH`$%NM871H96UA+TU,;V=G97(O365T:&]D3&]G9V5R36]N:71O<BYC<PH`(`M`0`8`+ZQ?X)Y;M,!]G]^@GENTP'V?WZ">6[3`5!+0(_!0`(`'E8ADNQ M#3<I<00`-(0`?)`"0`(`)`+A,`!!;F%T:&5M82]-3&]G9V5RM+TU,;V=G97(N8W-P<F]J"@`@`""`!!@`K2N%@GENTP%.T'^">6[3`4[0M?X)Y;M,!4$L!`C\`%`@`>5B&2WT6GD+D`*0$`"0`)`@`M`9ES`$%N871H96UA+TU,;V=G97(O34QO9V=E<BYC<W!R;VHN=7-E<@H`M(`0`8`(SFA8)Y;M,!Z%:%@GENTP'H5H6">6[3`5!+0(_!0`(`M'E8ADL4#B?-`0`-4+`;`"0`(`)`(Q2`!!;F%T:&5M82)]-M3&]G9V5R+U!R;V=R86TN8W,*`"$`$`&"[#HB">6[3`8SFA8)Y;M,!MC.:%@GENTP%02P$"/P`4`""`!Y6(9+`D`M`!`%#5@`06YA=&AE;6$O34QO9V=E<B]0<F]P97)T:65S+PH`(`M`0`8`(%UB())Y;M,!@76(@GENTP&(5HB">6[3`5!+0(_!0`(`'E8ADLM MIRX`= `( )`(%`K`"0`(`)`/6`!!;F%T:&5M82)]-3&]G9V5RM+U!R;W!E<G1I97,O07-S96UB;'E);F9O+F-S"@`@`""`!!@`Y@F/@GENMTP&! =8B">6[3`8UB())Y;M,!4$L!`C\`%`@`>5B&2PM`!4)`@`0`OD`$%N871H96UA+TUO8VM,(6)R87)Y+PH`(`M`0`8`+Y*IH)Y;M,!ODJF@GENTP$]9&F">6[3`5!+0(_!0`(`'E8MADM*.O&_GP`8!`?`"0`(`)`.]9`!!;F%T:&5M82)]-;V-KM3&EB<F%R>2]#;&%S<V5S+F-S"@`@`""`!!@`!N2@GENTP&-5X^">6[3M`8U7CX)Y;M,!4$L!`C\`%`@`>5B&2Y*.`M&N`P`X`H`"<)`M`@`RUH`$%N871H96UA+TUO8VM,(6)R87)Y+TUO8VM,(6)R87)Y+F-SM<')O:@H`(`0`8`&MIEH)Y;M,!YJ&2@GENTP'FH9*" ">6[3`5!+0(_M`!0`(`'E8ADL@;&ASBP`_P`>"0`(`)`+Y`!!!;F%TM:%&5M82)]-;V-K3&EB<F%R>2]->45N=6TN8W,*`"$`$`&"-"Y>" ">6[3
```

M>FGEH)Y;M,!Z:>6@GENTP%02P\$"/P`4`~~~~"!Y6(9+?T0Q7K@`~~!V`0`~
M(`~D`~~~~~"~~~~~"%7P`~06YA=&AE;6\$036]C:TQI8G)A<GDO37E3=')U
M8W0N8W,*"~~~~~\$`&!?!YB">6[3`7Q,EX)Y;M,!?\$R7@GENTP%02P\$"
M/P`4`~~~~~!Y6(9+~~~~~(`~D`~~~~~!~~~~~[8`~~06YA
M=&AE;6\$036]C:TQI8G)A<GDO4')O<&5R=&EE<R*`"~~~~~\$`&#[^J:"
M>6[3`?OZIH)Y;M,!\$>8@GENTP%02P\$"/P`4`~~~~"!Y6(9+,V;\$X'<"`~":
M!0`~+P`D`~~~~~"~~~~~"Y8`~06YA=&AE;6\$036]C:TQI8G)A<GDO4')O
M<&5R=&EE<R)!<W-E;6)L>4EN9F\N8W,*"~~~~~\$`&!`~.R">6[3`?OZ
MIH)Y;M,!^JF@GENTP%02P\$"/P`4`~~~~"!Y6(9+1;E^/(!`~#<!`~(`~D
M`~~~~~"~~~~~"]8P`~06YA=&AE;6\$036]C:TQI8G)A<GDO4V%Y2&5L;&\N
M8W,*"~~~~~\$`&!?!0IZ">6[3`1?4F()Y;M,!%]28@GENTP%02P\$"/P`4
M`~~~~~"!Y6(9+A4:5+P\$!`~~>@`~)0`D`~~~~~"~~~~~!M90`~06YA=&AE
M;6\$036]C:TQI8G)A<GDO4V%Y4W5P97)(96QL;RYC<PH`(`~~~~~0`8`\$8`
MHH)Y;M,!\$&:>@GENTP\$09IZ">6[3`5!+_0(`~!0`~~~~('E8ADMB`X!T`0`~
M`\$8"~~~~C`"0`~~~~~(~~~~~+F`~!!;F%T:&5M82]-;V-K3&EB<F%R>2]3
M:6UP;&5C;&%S<RYC<PH`(`~~~~~0`8`#XWIH)Y;M,!CQ6B@GENTP&/%:*"
M>6[3`5!+_0(`~!0`~~~~('E8ADO!.J?2OP\$`\$\$&~~~~C`"0`~~~~~(~~~~
M`~.]G`~!!;F%T:&5M82]-;V-K3&EB<F%R>2]3=&%T:6-#;&%S<RYC<PH`(`~~
M`~~~~0`8`'/FIH)Y;M,!ODJF@GENTP&^2J:">6[3`5!+_0(`~!0`~~~~('E8
MADL`~~~~~7`"0`~~~~~\$`~~~~~.]I`~!!;F%T:&5M82]396-U
M<F5796)3:&]P+PH`(`~~~~~0`8`!D:L()Y;M,!&1JP@GENTP\$9&F">6[3
M`5!+_0(`~!0`~~~~('E8ADL`~~~~~F`"0`~~~~~\$`~~~~~"1J
M`~!!;F%T:&5M82]396-U<F5796)3:&]P4&%S<W=O<F13=&5A;&5R+PH`(`~~
M`~~~~0`8`*J<LX)Y;M,!JIRS@GENTP\$N>FF">6[3`5!+_0(`~!0`~~~~('E8
MADMSG*9QB`~~~+H`~~~P`"0`~~~~~(~~~~~&AJ`~!!;F%T:&5M82]396-U
M<F5796)3:&]P4&%S<W=O<F13=&5A;&5R+T%P<"YC;VYF:6<*`"~~~~~\$`~
M&`"\XK*">6[3`71XLH)Y;M,!='BR@GENTP%02P\$"/P`4`~~~~"!Y6(9+HYA\$
M7)@`"~~!>!P`~,`~D`~~~~~"~~~~~^:P`~06YA=&AE;6\$04V5C=7)E5V5B
M4VAO<%!A<W-W;W)D4W1E86QE<B]0<F]G<F%M+F-S"@`@`~~~~~!!@`QE.S
M@GENTP&\XK*">6[3`~SBLH)Y;M,!4\$L!`C`~%`~~~~~>5B&2P`~~~~~
M`~~~~#\$(`~~~~~0`~~~~~)&X`~\$%N871H96UA+U-E8W5R95=E8E-H;W!0
M87-S=V]R9%-T96%L97(O4')O<&5R=&EE<R*`"~~~~~\$`&~-EK:">6[3
M`0V6MH)Y;M,!QE.S@GENTP%02P\$"/P`4`~~~~"!Y6(9+1JGWX\$`"~~\!0`~
M0`~D`~~~~~"~~~~~!S;@`~06YA=&AE;6\$04V5C=7)E5V5B4VAO<%!A<W-W
M;W)D4W1E86QE<B]0<F]P97)T:65S+T%S<V5M8FQY26YF;RYC<PH`(`~~~~
M`0`8`.P>MX)Y;M,!#9:V@GENTP\$-EK:">6[3`5!+_0(`~!0`~~~~('E8ADN#
M[R3SGP0`~\$`~.~!)`"0`~~~~~(~~~~~%)Q`~!!;F%T:&5M82]396-U<F57
M96)3:&]P4&%S<W=O<F13=&5A;&5R+U-E8W5R95=E8E-H;W!087-S=V]R9%-T
M96%L97(N8W-P<F]J"@`@`~~~~~!!@`3URV@GENTP'-B;.`">6[3`<V)LX)Y
M;M,!4\$L!`C`~%`~~~~~@`~>5B&2PZ4U%:+~~~~LP`~~~\$`~)~~~~~@`~~~~
M6'8`~\$%N871H96UA+U-E8W5R95=E8E-H;W`O07!P+F-O;F9I9PH`(`~~~~~
M`0`8`(X\$KH)Y;M,!48>L@GENTP%1AZR">6[3`5!+_0(`~!0`~~~~('E8ADLK
MDH^OE0(`~.P%`~F`"0`~~~~~(~~~~~")W`~!!;F%T:&5M82]396-U<F57
M96)3:&]P+T%S<V5M8FQY26YF;RYF<PH`(`~~~~~0`8`(";KH)Y;M,!]B2N
M@GENTP'V)*Z">6[3`5!+_0(`~!0`~~~~('E8ADL55TA<F`~~~~!@!`~F`"0`~
M`~~~~~(~~~~~/MY`~!!;F%T:&5M82]396-U<F5796)3:&]P+W!A8VMA9V5S
M+F-O;F9I9PH`(`~~~~~0`8`+)]KH)Y;M,!@)NN@GENTP&`FZZ">6[3`5!+_
M`0(`~!0`~~~~('E8ADMIC16)!`0`~.,+~~~A`"0`~~~~~(~~~~~=-Z`~!!
M;F%T:&5M82]396-U<F5796)3:&]P+U!R;V=R86TN9G,*"~~~~~\$`&`"C
MM*^">6[3`9H(KX)Y;M,!F@BO@GENTP%02P\$"/P`4`~~~~"!Y6(9+._\$@*T\$
M`~!#\$`~*P`D`~~~~~"~~~~~:~P`~06YA=&AE;6\$04V5C=7)E5V5B4VAO
M<"]396-U<F5796)3:&]P+F9S<')O:@H`(`~~~~~0`8`!1XLH)Y;M,!&1JP
M@GENTP\$9&K"">6[3`5!+_0(`~!0`~~~~('E8ADL`~~~~~.``"0`~
M`~~~~~\$`~~~~!"\$`~!!;F%T:&5M82]497-T+PH`(`~~~~~0`8`.VXN8)Y
M;M,![;BY@GENTP\$%CFF">6[3`5!+_0(`~!0`~~~~('E8ADMSG*9QB`~~~+H`
M`~`8`"0`~~~~~(~~~~~#R\$`~!!;F%T:&5M82]497-T+T%P<"YC;VYF:6<*
M`"~~~~~\$`&`~%> ">6[3`~\$RMX)Y;M,!H3*W@GENTP%02P\$"/P`4`~~~~
M`"!Y6(9+=??0Q@P\$`~<0`~&`~D`~~~~~"~~~~~#ZA`~06YA=&AE;6\$0
M5&5S="]0<F]G<F%M+F-S"@`@`~~~~~!!@`CS*X@GENTP&!E+>">6[3`8&4
MMX)Y;M,!4\$L!`C`~%`~~~~~>5B&2P`~~~~~!D`~)~~~~~0`~
M`~~~/D`~\$%N871H96UA+U1E<W0O4')O<&5R=&EE<R*`"~~~~~\$`&`#"
MR+N">6[3`<+(NX)Y;M,!-%JX@GENTP%02P\$"/P`4`~~~~"!Y6(9+FZJ>`7\$"
M`~",!0`~*`~D`~~~~~"~~~~~!SB0`~06YA=&AE;6\$05&5S="]0<F]P97)T
M:65S+T%S<V5M8FQY26YF;RYC<PH`(`~~~~~0`8`\$ZAO()Y;M,!PLB[@GEN
MTP'"R+N">6[3`5!+_0(`~!0`~~~~('E8ADNV[!~]50\$`~L`~~~~@`"0`~
M`~~~~(~~~~~"J,`~!!;F%T:&5M82]497-T+U-A>4AE;&QO36]N:71O<BYC<PH`
M(`~~~~~0`8`!GTN()Y;M,!+VRX@GENTP\$O;+B">6[3`5!+_0(`~!0`~~~~(
M`'E8ADLA?JJ/_00`~"/`~9`"0`~~~~~(~~~~~+V-`~!!;F%T:&5M82]4
M97-T+U1E<W0N8W-P<F]J"@`@`~~~~~!!@`KI&Y@GENTP&#"~+F">6[3`8,(

MN8)Y;M,!4\$L!\`C\`%``````@`>5B&2RH1<I\$G`0``E`(``"(`)```````````@
M`````\9(``\$%N871H96UA+U1E<W0O5&5S=\$UE=&AO9\$UO;FET;W(N8W,*``````
M``````\$`&```HKN">6[3`>VXN8)Y;M,![,BY@GENTP%02P4&``````#P`/``"]
)&P``6)0```````
`

end

|=[EOF]=-----=|