

# Clava Testing Results

July 28, 2023

## 1 c++98

### 1.1 Tests table

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
ArrayTypeTraitExpr	N/A	False						
CXXBindTemporaryExpr	0.328	True	0.077	True	1	True	0.046	True
CXXBoolLiteralExpr	0.321	True	0.087	True	1	True	0.053	True
CXXConstCastExpr	0.336	True	0.095	True	1	True	0.048	True
CXXConstructExpr	0.398	True	0.121	True	1	True	0.048	True
CXXConversionDecl	0.351	True	0.065	True	1	True	0.046	True
CXXDefaultArgExpr	0.313	True	0.074	True	1	True	0.06	True
CXXDependentScopeMemberExpr	0.386	True	0.1	True	1	True	0.045	True
CXXDestructorDecl	0.356	True	0.065	True	1	True	0.051	True
CXXDynamicCastExpr	0.382	True	0.101	True	1	True	0.044	True
CXXFoldExpr	N/A	False						
CXXFunctionalCastExpr	0.35	True	0.075	True	1	True	0.052	True
CXXMemberCallExpr	0.363	True	0.115	True	1	True	0.055	True
CXXNewExpr	0.335	True	0.073	True	1	True	0.045	True
CXXOperatorCallExpr	0.384	True	0.11	True	1	True	0.046	True
CXXPseudoDestructorExpr	0.347	True	0.062	True	1	True	0.048	True
CXXReinterpretCastExpr	0.318	True	0.074	True	1	True	0.05	True
CXXScalarValueInitExpr	0.366	True	0.064	True	1	True	N/A	False
CXXStaticCastExpr	0.329	True	0.071	True	1	True	0.052	True
CXXThisExpr	0.36	True	0.075	True	1	True	0.046	True
CXXThrowExpr	0.561	True	N/A	False				
CXXTypeidExpr	0.543	True	N/A	False				
CXXUnresolvedConstructExpr	0.303	True	0.071	True	1	True	0.047	True
ClassScopeFunctionSpecializationDecl	N/A	False						
ClassTemplatePartialSpecializationDecl	0.393	True	0.078	True	1	True	N/A	False
ClassTemplateSpecializationDecl	0.376	True	0.066	True	1	True	0.045	True
DependentScopeDeclRefExpr	0.374	True	0.071	True	1	True	0.048	True
ExprWithCleanups	0.335	True	0.082	True	1	True	0.061	True
FileScopeAsmDecl	N/A	False						
FriendDecl	0.331	True	0.076	True	1	True	0.051	True
FunctionTemplateDecl	0.346	True	0.064	True	1	True	0.052	True

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
GNUNullExpr	0.353	True	0.065	True	1	True	0.048	True
ImplicitCastExpr	0.363	True	0.08	True	1	True	0.048	True
InitListExpr	0.359	True	0.091	True	1	True	0.05	True
LinkageSpecDecl	0.32	True	0.067	True	1	True	0.05	True
MaterializeTemporaryExpr	0.412	True	0.095	True	1	True	0.049	True
NamespaceAliasDecl	0.32	True	0.086	True	1	True	0.049	True
NamespaceDecl	0.347	True	0.076	True	1	True	0.049	True
NonTypeTemplateParmDecl	0.329	True	0.078	True	1	True	0.047	True
OpaqueValueExpr	0.384	True	0.067	True	1	True	0.05	True
ParenListExpr	0.341	True	0.094	True	1	True	0.05	True
SizeOfPackExpr	0.351	True	0.072	True	1	True	0.044	True
SubstNonTypeTemplateParmExpr	0.714	True	0.077	True	1	True	0.653	True
TemplateTypeParmDecl	0.312	True	0.066	True	1	True	0.047	True
UnresolvedUsingValueDecl	0.337	True	0.078	True	1	True	N/A	False
UsingDirectiveDecl	0.33	True	0.054	True	1	True	0.05	True
VAArgExpr	0.385	True	0.076	True	1	True	0.054	True
and	0.353	True	0.083	True	1	True	0.045	True
and_eq	0.4	True	0.094	True	1	True	0.05	True
bitand	0.371	True	0.121	True	1	True	0.047	True
bitor	0.372	True	0.082	True	1	True	0.05	True
bool	0.334	True	0.062	True	1	True	0.051	True
break_do	0.329	True	0.079	True	1	True	0.05	True
break_for	0.348	True	0.063	True	1	True	0.056	True
break_switch	0.333	True	0.079	True	1	True	0.087	True
break_while	0.355	True	0.078	True	1	True	0.048	True
case	0.323	True	0.068	True	1	True	0.046	True
catch	0.325	True	0.064	True	1	True	0.047	True
char	0.386	True	0.07	True	1	True	0.045	True
class	0.354	True	0.06	True	1	True	0.063	True
class_public	0.39	True	0.067	True	1	True	0.051	True
compl	0.343	True	0.076	True	1	True	0.057	True
const	0.384	True	0.081	True	1	True	0.048	True
const_cast	0.326	True	0.077	True	1	True	0.048	True
continue_do_while_loop	0.346	True	0.09	True	1	True	0.051	True
continue_for_loop	0.421	True	0.099	True	1	True	0.051	True
continue_while_loop	0.346	True	0.088	True	1	True	0.045	True
default	0.396	True	0.098	True	1	True	0.057	True
delete_ptr	0.37	True	0.063	True	1	True	0.044	True
do_while	0.37	True	0.095	True	1	True	0.051	True
double_var_decl	0.299	True	0.053	True	1	True	0.053	True
dynamic_cast	0.338	True	0.078	True	1	True	0.048	True
enum_decl	0.323	True	0.07	True	1	True	0.052	True
explicit_struct_member_decl	0.368	True	0.063	True	1	True	0.051	True
extern_language_func_decl	0.309	True	0.066	True	1	True	0.048	True

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
false	0.384	True	0.082	True	1	True	0.054	True
float_var_decl	0.436	True	0.084	True	1	True	0.052	True
for_loop	0.345	True	0.062	True	1	True	0.045	True
friend_member_decl	0.373	True	0.06	True	1	True	0.045	True
goto	0.396	True	0.14	True	1	True	0.06	True
if	0.421	True	0.075	True	1	True	0.064	True
if_else	0.415	True	0.098	True	1	True	0.055	True
inline_func_decl	0.441	True	0.082	True	1	True	0.059	True
int_var_decl	0.437	True	0.085	True	1	True	0.058	True
long_var_decl	0.475	True	0.082	True	1	True	0.061	True
mutable_struct_member_decl	0.397	True	0.096	True	1	True	0.088	True
named_union_decl	0.376	True	0.079	True	1	True	0.052	True
namespace	0.407	True	0.089	True	1	True	0.058	True
new	0.422	True	0.091	True	1	True	0.058	True
not	0.327	True	0.055	True	1	True	0.045	True
not_eq	0.296	True	0.061	True	1	True	0.044	True
operator	0.344	True	0.082	True	1	True	0.043	True
or	0.455	True	0.097	True	1	True	0.044	True
or_eq	0.319	True	0.08	True	1	True	0.043	True
private	0.333	True	0.06	True	1	True	0.047	True
protected_member_decl	0.349	True	0.076	True	1	True	0.043	True
register	0.273	True	0.039	True	1	True	0.052	True
return	0.309	True	0.051	True	1	True	0.043	True
short_val_decl	0.345	True	0.066	True	1	True	0.052	True
signed_var_decl	0.35	True	0.064	True	1	True	0.091	True
sizeof	0.481	True	0.137	True	1	True	0.057	True
static_cast	0.349	True	0.08	True	1	True	0.052	True
static_var_decl	0.37	True	0.079	True	1	True	0.049	True
struct_decl	0.375	True	0.059	True	1	True	0.045	True
switch_case	0.326	True	0.064	True	1	True	0.046	True
template_decl	0.286	True	0.059	True	1	True	0.044	True
template_typename	0.299	True	0.07	True	1	True	0.043	True
this	0.296	True	0.062	True	1	True	0.043	True
throw	0.673	True	0.092	True	1	True	0.658	True
true	0.31	True	0.058	True	1	True	0.043	True
try	0.356	True	0.076	True	1	True	0.092	True
typedef	0.361	True	0.059	True	1	True	0.045	True
typeid	0.346	True	0.065	True	1	True	0.051	True
unsigned_var_decl	0.324	True	0.068	True	1	True	0.044	True
using	0.324	True	0.072	True	1	True	0.049	True
using_namespace	0.308	True	0.06	True	1	True	0.043	True
virtual_struct_member_decl	0.298	True	0.058	True	1	True	0.043	True
void_func_decl	0.372	True	0.048	True	1	True	0.042	True
volatile_var_decl	0.324	True	0.061	True	1	True	0.072	True

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
<b>wchar_t_var_decl</b>	0.348	True	0.081	True	1	True	0.048	True
<b>while_loop</b>	0.345	True	0.08	True	1	True	0.048	True
<b>xor</b>	0.371	True	0.091	True	1	True	0.049	True
<b>xor_eq</b>	0.338	True	0.078	True	1	True	0.046	True

## 1.2 Success and Fail Rate chart

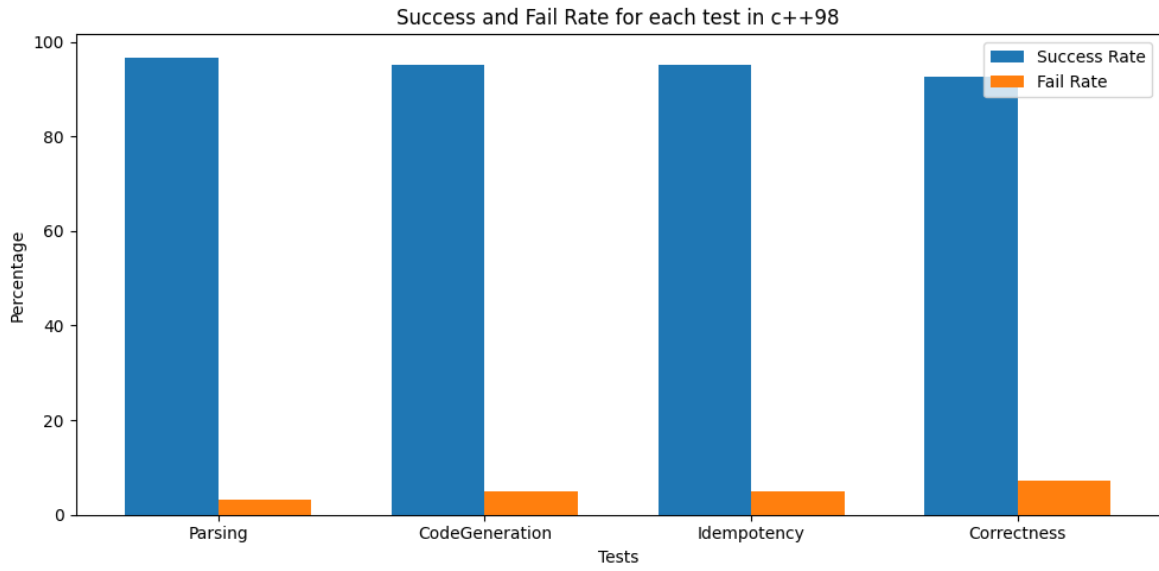


Figure 1: Success and Fail Rate for each test in c++98

## 2 c++11

### 2.1 Tests table

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
ArrayInitIndexExpr	0.371	True	0.067	True	1	True	0.044	True
ArrayInitLoopExpr	N/A	False						
AtomicExpr	0.367	True	0.094	True	1	True	N/A	False
CXXDefaultInitExpr	0.338	True	0.093	True	1	True	0.047	True
CXXDeleteExpr	0.365	True	0.101	True	1	True	0.05	True
CXXForRangeStmt	0.338	True	0.095	True	1	True	0.056	True
CXXInheritedCtorInitExpr	0.342	True	N/A	False				
CXXNoexceptExpr	0.332	True	0.067	True	1	True	0.045	True
CXXNullPtrLiteralExpr	0.366	True	0.088	True	1	True	0.043	True
CXXStdInitializerListExpr	0.344	True	0.074	True	1	True	0.051	True
ConstantExpr	0.352	True	0.074	True	1	True	0.053	True
ConstructorUsingShadowDecl	0.337	True	N/A	False				
LambdaExpr	0.338	True	0.088	True	1	True	0.043	True
PackExpansionExpr	0.309	True	0.081	True	1	True	0.045	True
TypeAliasDecl	0.322	True	0.059	True	1	True	0.047	True
TypeTraitExpr	0.353	True	0.077	True	1	True	N/A	False
UnresolvedLookupExpr	0.375	True	0.086	True	1	True	0.046	True
UnresolvedUsingTypenameDecl	0.304	True	0.073	True	1	True	0.043	True
UserDefinedLiteral	0.629	True	0.065	True	1	True	0.356	True
alignas	0.325	True	0.072	True	1	True	N/A	False
alignof	0.602	True	0.064	True	1	True	0.622	True
auto	0.327	True	0.07	True	1	True	0.045	True
char16_t	0.323	True	0.06	True	1	True	0.063	True
char32_t	0.318	True	0.072	True	1	True	0.045	True
class_enum_type	0.306	True	0.055	True	1	True	0.044	True
constexpr	0.318	True	0.072	True	1	True	0.048	True
decltype	0.309	True	0.08	True	1	True	0.046	True
default_externally_visible	0.297	True	0.066	True	1	True	0.044	True
delete_funcs	0.584	True	0.091	True	1	True	0.625	True
for_range	0.393	True	0.092	True	1	True	0.049	True
inline_namespace	0.3	True	0.051	True	1	True	0.043	True
mutable_lambda	N/A	False						
noexcept	0.318	True	0.044	True	1	True	0.046	True
nullptr	0.374	True	0.091	True	1	True	0.044	True
reinterpret_cast	0.323	True	0.069	True	1	True	0.051	True
sizeof_ellipsis	N/A	False						
static_assert	0.341	True	0.067	True	1	True	0.103	True
thread_local	0.423	True	0.07	True	1	True	0.34	True
using_alias	N/A	False						

## 2.2 Success and Fail Rate chart

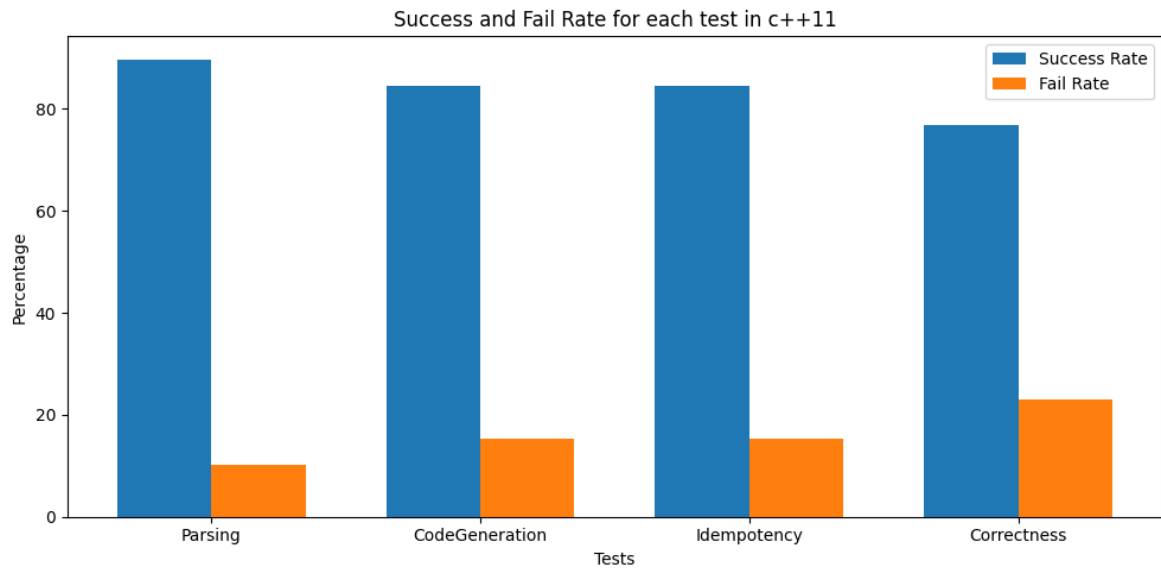


Figure 2: Success and Fail Rate for each test in c++11

### 3 c++14

#### 3.1 Tests table

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
VarTemplateDecl	0.325	True	0.07	True	1	True	N/A	False
VarTemplatePartialSpecializationDecl	N/A	False						
VarTemplateSpecializationDecl	0.323	True	0.059	True	1	True	N/A	False



### 3.2 Success and Fail Rate chart

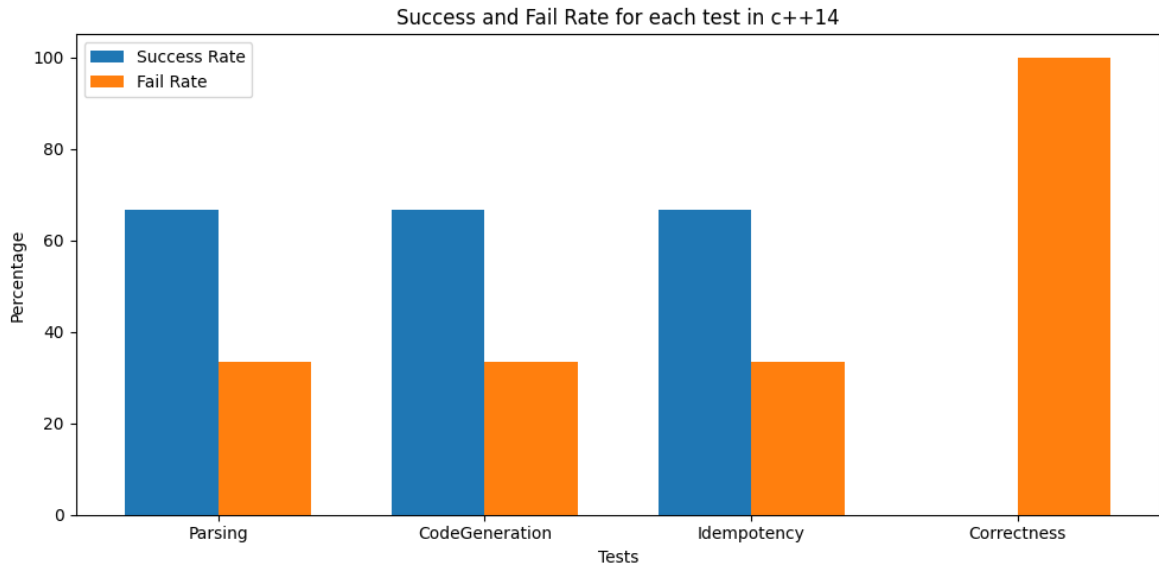


Figure 3: Success and Fail Rate for each test in c++14

## 4 c++17

### 4.1 Tests table

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
BindingDecl	N/A	False						
CXXDeductionGuideDecl	N/A	False						
DecompositionDecl	N/A	False						
UsingPackDecl	0.319	True	0.07	True	1	True	0.046	True
auto_structured_binding	N/A	False						
inline_specifier	0.336	True	0.083	True	1	True	0.044	True

## 4.2 Success and Fail Rate chart

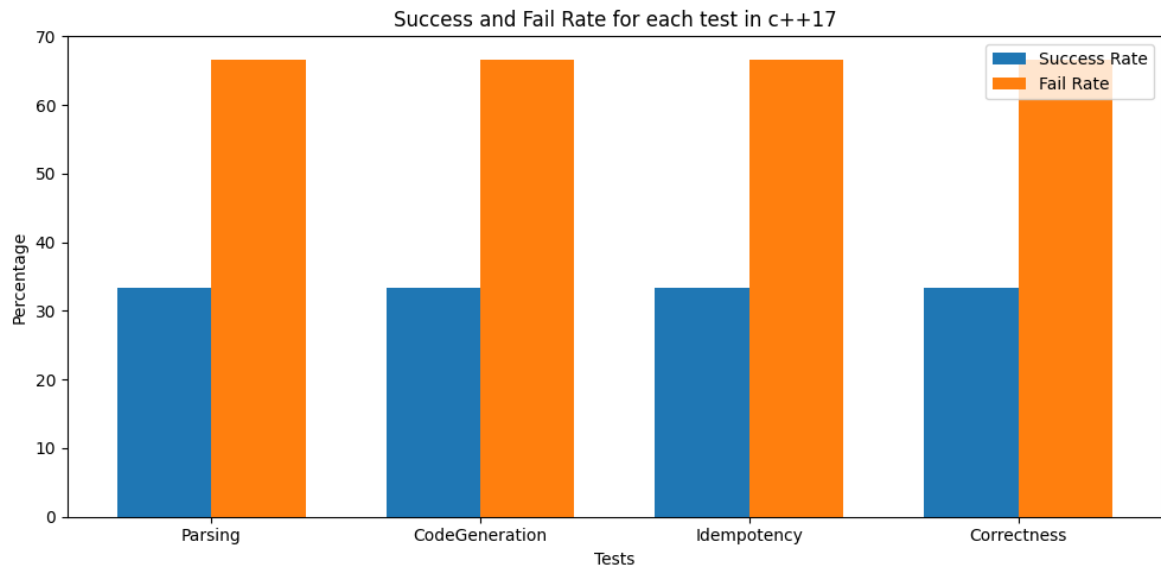


Figure 4: Success and Fail Rate for each test in c++17

## 5 c++20

### 5.1 Tests table

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
CXXRewrittenBinaryOperator	0.324	True	0.073	True	1	True	0.044	True
CoawaitExpr	N/A	False						
ConceptDecl	N/A	False						
ConceptSpecializationExpr	N/A	False						
CoroutineBodyStmt	N/A	False						
CoroutineSuspendExpr	N/A	False						
CoyieldExpr	N/A	False						
DependentCoawaitExpr	N/A	False						
RequiresExpr	N/A	False						
UsingEnumDecl	N/A	False						
auto_abbrev_func_temp	N/A	False						
char8_t	N/A	False						
co_await_NF	N/A	False						
co_return_NF	N/A	False						
co_yield	N/A	False						
concept	N/A	False						
consteval	N/A	False						
constexpr	N/A	False						
export	N/A	False						
private_module	N/A	False						
requires	N/A	False						
using_enum	N/A	False						

## 5.2 Success and Fail Rate chart

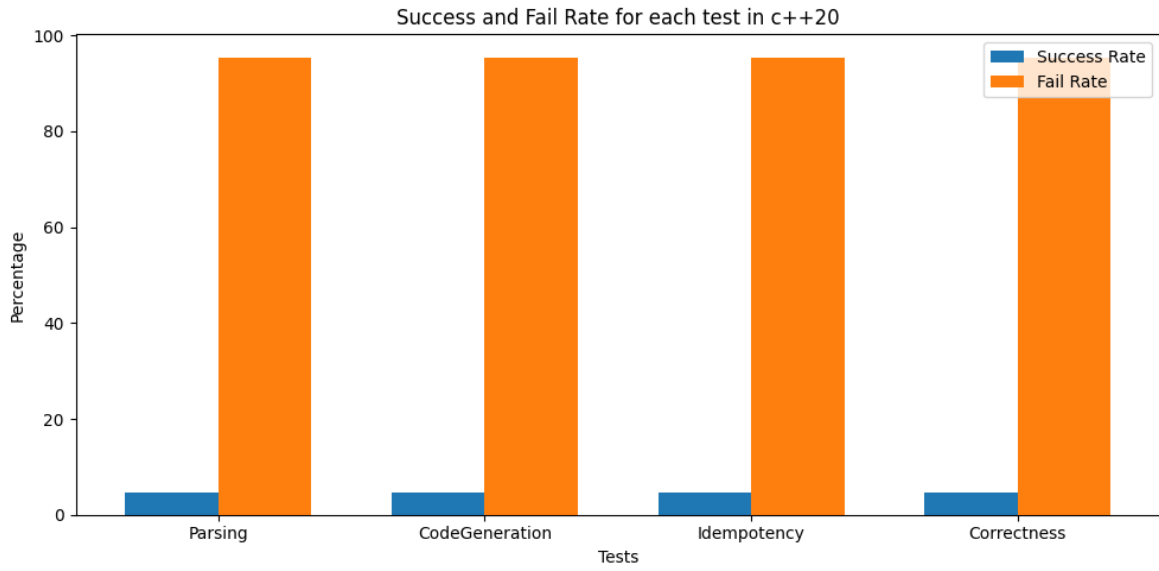


Figure 5: Success and Fail Rate for each test in c++20

## 6 c89

### 6.1 Tests table

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
AddrLabelExpr	N/A	False						
ArrayInitIndexExpr	0.377	True	0.072	True	1	True	0.045	True
ArraySubscriptExpr	N/A	False						
BinaryConditionalOperator	0.373	True	0.084	True	1	True	0.043	True
BinaryOperator	0.323	True	0.063	True	1	True	0.049	True
CStyleCastExpr	0.337	True	0.068	True	1	True	0.048	True
CallExpr	0.311	True	0.07	True	1	True	0.051	True
CharacterLiteral	0.333	True	0.061	True	1	True	0.051	True
CompoundAssignOperator	0.338	True	0.075	True	1	True	0.048	True
CompoundLiteralExpr	0.398	True	0.084	True	1	True	0.061	True
ConditionalOperator	0.486	True	0.131	True	1	True	0.056	True
DeclRefExpr	0.362	True	0.076	True	1	True	0.048	True
EnumConstantDecl	0.375	True	0.064	True	1	True	0.044	True
ExtVectorElementExpr	N/A	False						
FloatingLiteral	0.492	True	0.105	True	1	True	0.059	True
ImaginaryLiteral	N/A	False						
ImplicitValueInitExpr	0.343	True	0.072	True	1	True	0.063	True
IndirectFieldDecl	0.362	True	0.064	True	1	True	0.053	True
IndirectGotoStmt	N/A	False						
InitListExpr	0.405	True	0.074	True	1	True	0.073	True
IntegerLiteral	0.376	True	0.08	True	1	True	0.059	True
MatrixSubscriptExpr	0.399	True	0.078	True	1	True	0.053	True
MemberExpr	0.542	True	0.234	True	1	True	0.063	True
NoInitExpr	0.395	True	0.118	True	1	True	0.047	True
ParenExpr	0.312	True	0.079	True	1	True	0.044	True
StringLiteral	0.354	True	0.075	True	1	True	0.052	True
UnaryExprOrTypeTraitExpr	0.326	True	0.078	True	1	True	0.052	True
UnaryOperator	0.328	True	0.063	True	1	True	0.047	True
asm_func_decl	N/A	False						
auto_var_decl	0.318	True	0.056	True	1	True	0.045	True
char_var_decl	0.317	True	0.059	True	1	True	0.044	True
const_var_decl	0.343	True	0.072	True	1	True	0.047	True
do_while	0.359	True	0.091	True	1	True	0.053	True
double_var_decl	0.297	True	0.069	True	1	True	0.046	True
enum_decl	0.331	True	0.053	True	1	True	0.044	True
extern_var_decl	0.324	True	0.064	True	1	True	0.045	True
float_var_decl	0.354	True	0.076	True	1	True	0.045	True
for_loop	0.344	True	0.07	True	1	True	0.047	True
for_loop_break	0.371	True	0.079	True	1	True	0.049	True
for_loop_continue	0.343	True	0.084	True	1	True	0.045	True
goto	N/A	False						

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
if	0.35	True	0.085	True	1	True	0.044	True
if_else	0.353	True	0.095	True	1	True	0.047	True
int_var_decl	0.309	True	0.07	True	1	True	0.056	True
long_var_decl	0.316	True	0.066	True	1	True	0.047	True
named_union_decl	0.311	True	0.07	True	1	True	0.048	True
prep_define	0.333	True	0.088	True	1	True	0.046	True
prep_defined	0.303	True	0.062	True	1	True	0.046	True
prep_elif	0.322	True	0.08	True	1	True	0.045	True
prep_else	0.369	True	0.085	True	1	True	0.05	True
prep_endif	0.353	True	0.065	True	1	True	0.045	True
prep_error	0.352	True	0.076	True	1	True	0.046	True
prep_if	0.334	True	0.08	True	1	True	0.044	True
prep_ifdef	0.326	True	0.068	True	1	True	0.049	True
prep_ifndef	0.327	True	0.058	True	1	True	0.047	True
prep_include	0.324	True	0.062	True	1	True	0.055	True
prep_line	0.307	True	0.055	True	1	True	0.045	True
prep_pragma	0.349	True	0.076	True	1	True	0.047	True
prep_undef	0.333	True	0.082	True	1	True	0.049	True
register_var_decl	0.338	True	0.09	True	1	True	0.061	True
return_stmt	0.326	True	0.061	True	1	True	0.053	True
short_var_decl	0.398	True	0.074	True	1	True	0.051	True
signed_var_decl	0.316	True	0.075	True	1	True	0.057	True
sizeof	0.353	True	0.056	True	1	True	0.051	True
static_var_decl	0.373	True	0.078	True	1	True	0.046	True
struct_decl	0.34	True	0.062	True	1	True	0.042	True
switch_case	0.341	True	0.11	True	1	True	0.054	True
switch_default	0.364	True	0.078	True	1	True	0.05	True
typedef_decl	0.345	True	0.076	True	1	True	0.05	True
unnamed_union_decl	N/A	False						
unsigned_var_decl	0.35	True	0.054	True	1	True	0.043	True
void_func_decl	0.307	True	0.045	True	1	True	0.045	True
volatile_var_decl	0.334	True	0.072	True	1	True	0.048	True
while_stmt	0.35	True	0.092	True	1	True	0.056	True

## 6.2 Success and Fail Rate chart

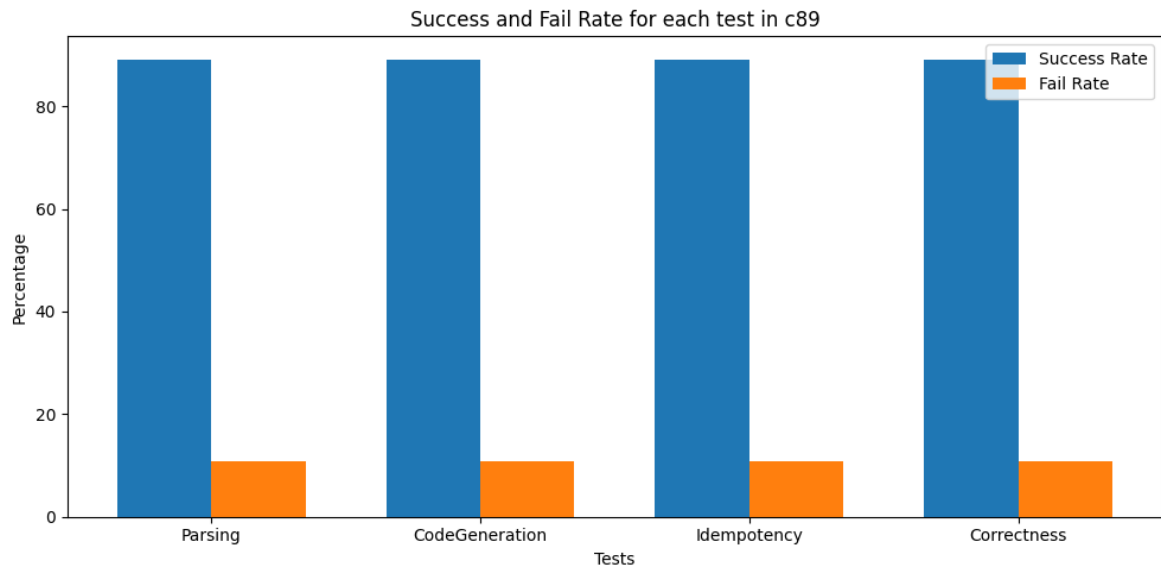


Figure 6: Success and Fail Rate for each test in c89



## 7 c99

### 7.1 Tests table

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
_Bool_var_decl	N/A	False						
_Complex_var_decl	N/A	False						
_Imaginary	N/A	False						
_Pragma	0.304	True	0.058	True	1	True	0.05	True
inline_func_decl	0.314	True	0.075	True	1	True	0.053	True
restrict	N/A	False						

## 7.2 Success and Fail Rate chart

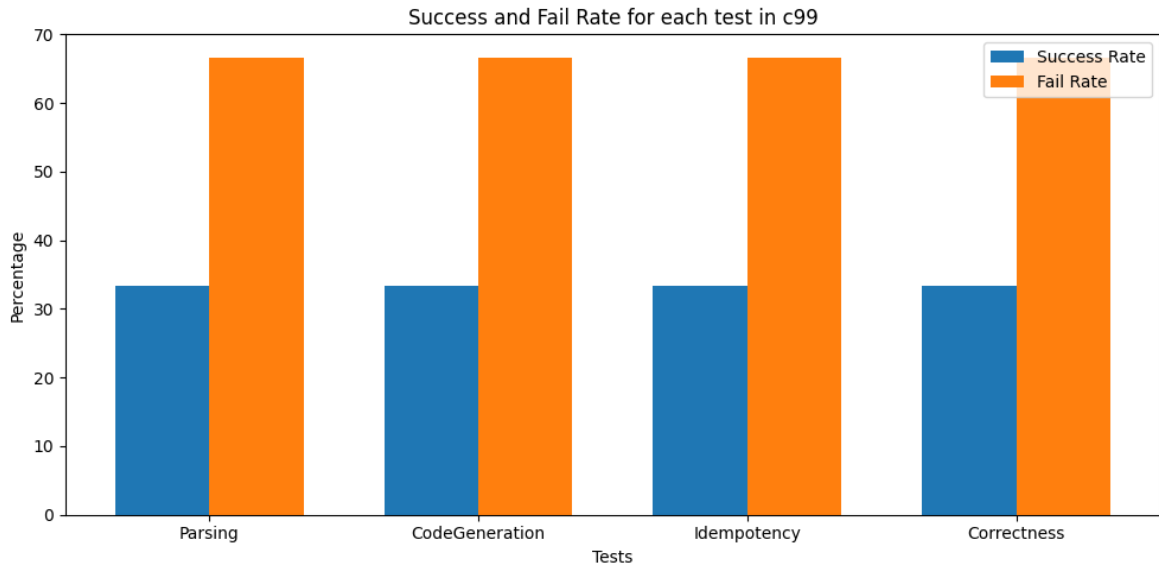


Figure 7: Success and Fail Rate for each test in c99

## 8 c11

### 8.1 Tests table

	Parsing		CodeGeneration		Idempotency		Correctness	
	Time	Success	Time	Success	Tries	Success	Time	Success
<b>GenericSelectionExpr</b>	N/A	<b>False</b>						
<b>_Alignas</b>	0.333	<b>True</b>	0.061	<b>True</b>	1	<b>True</b>	0.046	<b>True</b>
<b>_Alignof</b>	0.406	<b>True</b>	0.079	<b>True</b>	1	<b>True</b>	0.064	<b>True</b>
<b>_Atomic</b>	0.314	<b>True</b>	0.074	<b>True</b>	1	<b>True</b>	0.052	<b>True</b>
<b>_Generic</b>	N/A	<b>False</b>						
<b>_Noreturn</b>	0.406	<b>True</b>	0.111	<b>True</b>	1	<b>True</b>	0.094	<b>True</b>
<b>_Static_assert</b>	0.349	<b>True</b>	0.078	<b>True</b>	1	<b>True</b>	0.05	<b>True</b>
<b>_Thread_local</b>	0.496	<b>True</b>	0.088	<b>True</b>	1	<b>True</b>	0.081	<b>True</b>

## 8.2 Success and Fail Rate chart

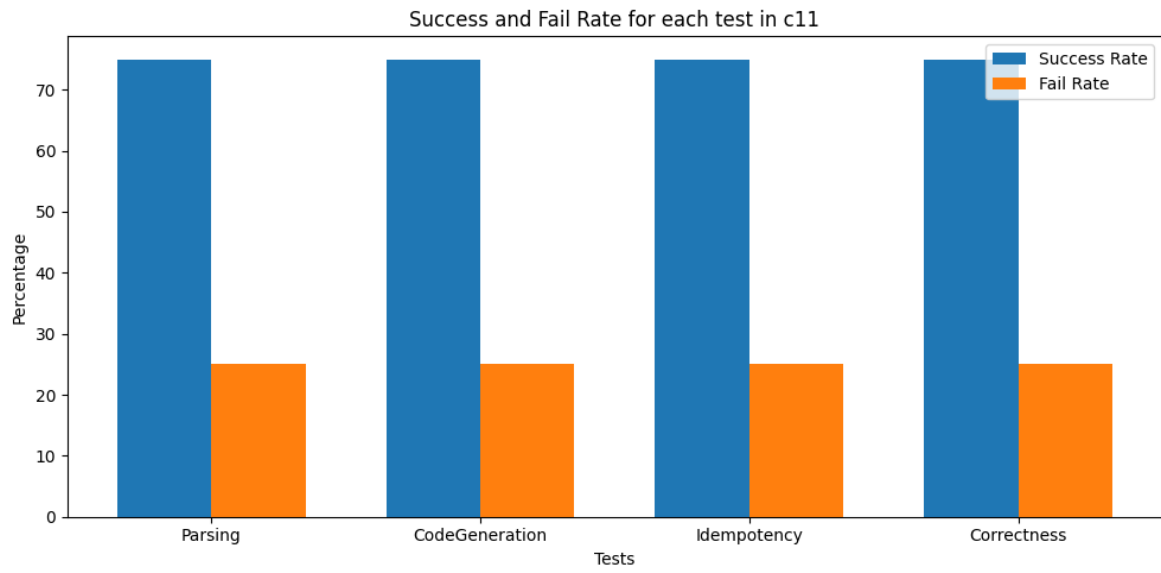


Figure 8: Success and Fail Rate for each test in c11

## 9 Statistics

### 9.1 Tables

- PT: Denotes the number of passed tests / test phases
- RelP: Denotes the percentage of passed tests / test phases. Phases that were not run are disregarded.
- AbsP: Denotes the absolute percentage of passed tests / test phases. Phases that were not run are counted as failures.

Standard	Parsing		Code Gen		Idempotency		Correctness		All	
	PT	Rel%	PT	Rel%	PT	Rel%	PT	Rel%	PT	Rel%
c++98	119	96.75	117	98.32	117	100.00	114	97.44	467	98.11
c++11	35	89.74	33	94.29	33	100.00	30	90.91	131	93.57
c++14	2	66.67	2	100.00	2	100.00	0	0.00	6	66.67
c++17	2	33.33	2	100.00	2	100.00	2	100.00	8	66.67
c++20	1	4.55	1	100.00	1	100.00	1	100.00	4	16.00
c89	66	89.19	66	100.00	66	100.00	66	100.00	264	97.06
c99	2	33.33	2	100.00	2	100.00	2	100.00	8	66.67
c11	6	75.00	6	100.00	6	100.00	6	100.00	24	92.31

Table 1: Relative percentage of tests passed

Standard	Parsing		Code Gen		Idempotency		Correctness		All	
	PT	Abs%	PT	Abs%	PT	Abs%	PT	Abs%	PT	Abs%
c++98	119	96.75	117	95.12	117	95.12	114	92.68	467	94.92
c++11	35	89.74	33	84.62	33	84.62	30	76.92	131	83.97
c++14	2	66.67	2	66.67	2	66.67	0	0.00	6	50.00
c++17	2	33.33	2	33.33	2	33.33	2	33.33	8	33.33
c++20	1	4.55	1	4.55	1	4.55	1	4.55	4	4.55
c89	66	89.19	66	89.19	66	89.19	66	89.19	264	89.19
c99	2	33.33	2	33.33	2	33.33	2	33.33	8	33.33
c11	6	75.00	6	75.00	6	75.00	6	75.00	24	75.00

Table 2: Absolute percentage of tests passed.

## 9.2 Absolute Percentage of tests passed chart

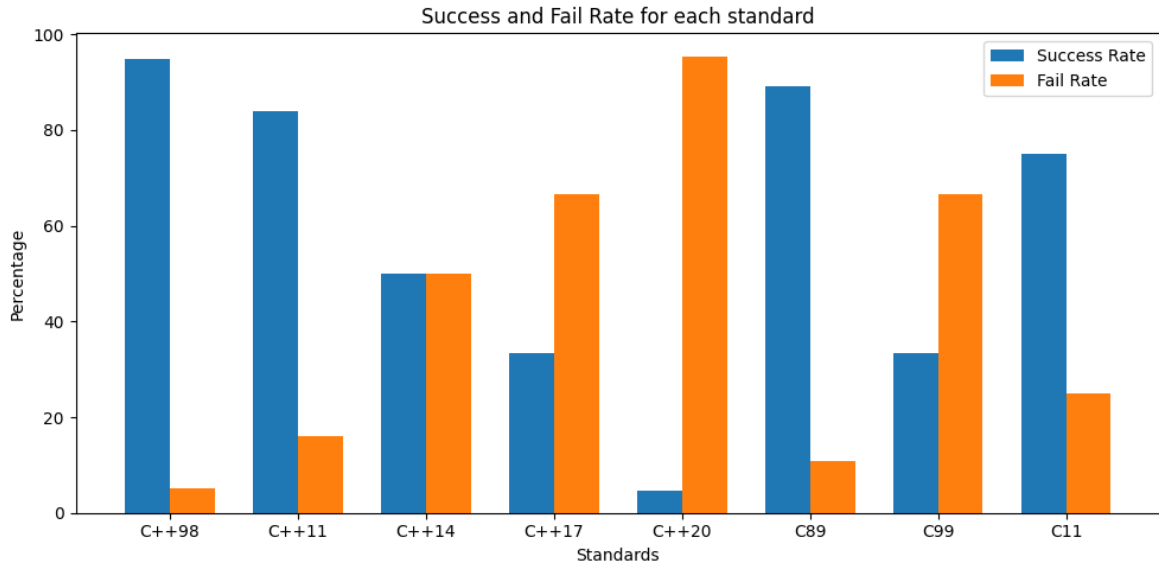


Figure 9: Success and Fail Rate for each standard

## 9.3 Relative Percentage of tests passed chart

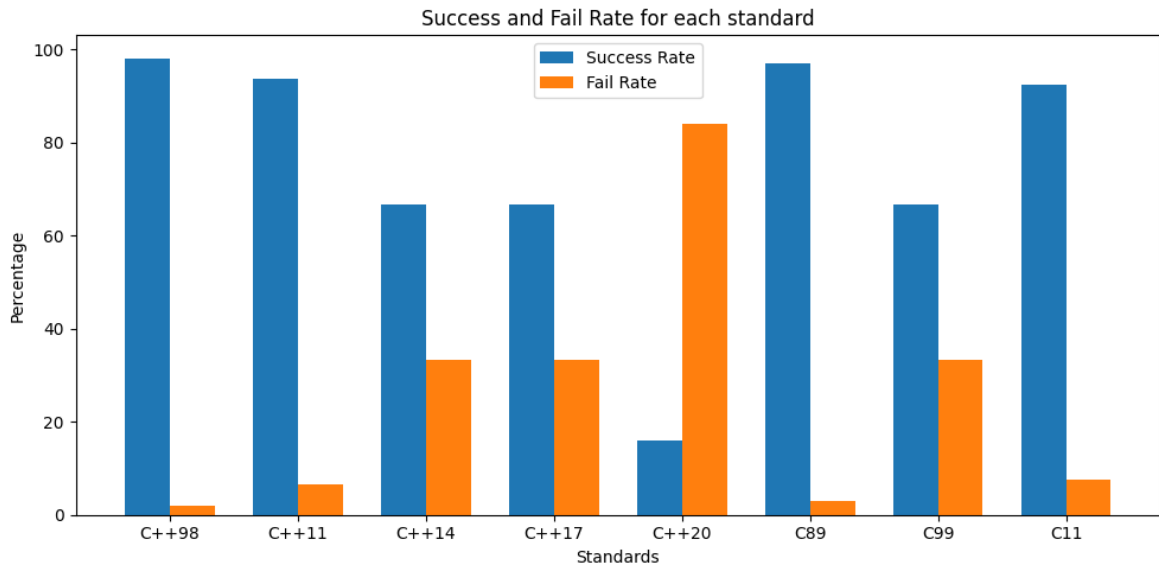


Figure 10: Success and Fail Rate for each standard