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Part 6: TTCN‑3 Control Interface (TCI)

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# 9 ANSI C language mapping

## 9.1 Introduction

This clause defines the TCI ANSI‑C [8] language mapping for the TCI data specified in clause 7.2 and for the TCI operations specified in clause 7.3.

## 9.2 Value interfaces

Table

| TCI IDL Interface | ANSI C representation | Notes and comments |
| --- | --- | --- |
| Type | | |
| TciModuleIdType getDefiningModule() | TciModuleIdType  tciGetDefiningModule(Type inst) |  |
| Tstring getName() | String tciGetName(Type inst) | String type reused from IDL (OMG recommendation). |
| TciTypeClassType getTypeClass() | TciTypeClassType tciGetTypeClass  (Type inst) |  |
| Value newInstance() | Value tciNewInstance(Type inst) |  |
| Tstring getTypeEncoding() | String tciGetTypeEncoding(Type inst) |  |
| TstringSeq getTypeExtension() | String\* tciGetTypeExtension(Type inst) |  |
| Tstring getTypeEncodingVariant() | String tciGetTypeEncodingVariant(Type inst) |  |
| Value parseValue(TString val) | Value tciParseValue(Type inst, String val) |  |
| LengthRestriction getTypeLengthRestriction() | int tciGetTypeLengthRestriction  (Type inst, TciLengthRestriction \* restriction) | Returns 0 for no restriction and -1 for restriction. The restriction is returned in the second parameter. |
| RangeBoundary getLowerTypeBoundary() | Int tciGetLowerTypeBoundary  (Type inst, TciRangeBoundary \* boundary) | Returns 0 for no boundary and -1 if boundary is present. The boundary is returned in the second parameter. |
| RangeBoundary geUpperTypeBoundary() | int tciGetUpperTypeBoundary  (Type inst, TciRangeBoundary \* boundary) |
| MatchingMechanism getTypeMatchingMechanism() | Value tciGetTypeMatchingMechanism  (Type inst) | Get the restriction of type of value |
| Value | | |
| Tstring getValueEncoding() | String tciGetValueEncoding(Value inst) |  |
| Tstring getValueEncodingVariant() | String tciGetValueEncodingVariant(Value inst) |  |
| Type getType() | Type tciGetType(Value inst) |  |
| Tboolean notPresent() | Boolean tciNotPresent(Value inst) | Boolean type reused from IDL (OMG recommendation). |
|  | void tciSetNull(Value inst) | For optional parameters of operations,  see clause 9.7. |
|  | Boolean tciIsNull(Value inst) | For optional parameters of operations,  see clause 9.7. Boolean type reused from IDL (OMG recommendation). |
| Tboolean isMatchingSymbol() | Boolean tciIsMatchingSymbol(Value inst) |  |
| TString valueToString() | String tciValueToString(Value inst) |  |
| Tboolean isLazy () | Boolean tciIsLazy(Value inst) |  |
| Tboolean isFuzzy () | Boolean tciIsFuzzy(Value inst) |  |
| Tboolean isEvaluated() | Boolean tciIsEvaluated(Value inst) |  |
|  | Boolean tciHasLengthRestriction(Value inst) | Returns true if length restriction is present, false otherwise. |
| LengthRestriction getLengthRestriction() | TciLengthRestriction tciGetLengthRestriction(Value inst) |  |
|  | void tciRemoveLengthRestriction(Value inst) | Removes length restriction. |
| void setLengthRestriction (LengthRestriction restriction) | void tciSetLengthRestriction(Value inst, TciLengthRestriction \* restriction) |  |
| TBoolean isIfPresentEnabled() | Boolean tciIsIfPresentEnabled(Value inst) |  |
| void setIfPresentEnabled(TBoolean enabled) | void tciSetIfPresentEnabled(Value inst, Boolean enabled) |  |
| LengthRestriction getTypeLengthRestriction() | int tciGetValueLengthRestriction  (Value inst, TciLengthRestriction \* restriction) | Returns 0 for no restriction and -1 for restriction. The restriction is returned in the second parameter. |
| RangeBoundary getLowerTypeBoundary() | int tciGetLowerValueBoundary  (Value inst, TciRangeBoundary \* boundary) | Returns 0 for no boundary and -1 if boundary is present. The boundary is returned in the second parameter. |
| RangeBoundary geUpperTypeBoundary() | int tciGetUpperValueBoundary  (Value inst, TciRangeBoundary \* boundary) |
| MatchingMechanism getTypeMatchingMechanism() | Value tciGetValueMatchingMechanism  (Value inst) | Get the restriction of type of value |
| IntegerValue | | |
| Tinteger getInt() | String tciGetIntAbs(Value inst) | Returns the (10‑base) integer absolute value as an ASCII string. |
|  | unsigned long int tciGetIntNumberOfDigits  (Value inst) | Returns the number of digits in an integer value. |
|  | Boolean tciGetIntSign(Value inst) | Returns true if the number is positive, false otherwise. |
|  | char tciGetIntDigit  (Value inst,  unsigned long int position) | Returns the value of the digit at position 'position', where position 0 is the least significant digit. |
|  | long long tciGetInt(Value inst) | Alternative getInt realization for integers not exceeding the boundaries of signed 64-bit. |
| void setInt(in Tinteger value) | void tciSetIntAbs(Value inst, String value) | Sets the (10‑base) absolute value of the integer via an ASCII string. The first digit shall not be 0 unless the value is 0. |
|  | Void tciSetIntNumberOfDigits  (Value inst,  unsigned long int dig\_num) | Sets the number of digits in an integer value. |
|  | void tciSetIntSign  (Value inst,  Boolean sign) | Sets the sign to + (true) or - (false). |
|  | void tciSetIntDigit  (Value inst,  unsigned long int position,  char digit) | Sets the value of the digit at position 'position', where position 0 is the least significant digit. |
|  | void tciSetInt(Value inst, long long value) | Alternative setInt realization for integers not exceeding the boundaries of signed 64-bit. |
| FloatValue | | |
| Tfloat getFloat() | double tciGetFloatValue(Value inst) |  |
| void setFloat(in Tfloat value) | void tciSetFloatValue(Value inst, double value) |  |
| BooleanValue | | |
| Tboolean getBoolean() | Boolean tciGetBooleanValue(Value inst) |  |
| void setBoolean (in Tboolean value) | void tciSetBooleanValue  (Value inst, Boolean value) |  |
| CharstringValue | | |
| Tstring getString() | TciCharStringValue tciGetCStringValue(Value inst) |  |
| void setString(in Tstring value) | void tciSetCStringValue  (Value inst, TciCharStringValue value) |  |
| Tchar getChar (in Tinteger position) | char tciGetCStringCharValue  (Value inst, long int position) |  |
| void setChar  (in Tinteger position, in Tchar value) | void tciSetCStringCharValue  (Value inst,  long int position,  char value) |  |
| Tinteger getLength() | unsigned long int tciGetCStringLength (Value inst) |  |
| void setLength(in Tinteger len) | void tciSetCStringLength  (Value inst,  unsigned long int len) |  |
| UniversalCharstringValue | | |
| Tstring getString() | TciUCStringValue tciGetUCStringValue(Value inst) |  |
| void setString(in Tstring value) | void tciSetUCStringValue  (Value inst, TciUCStringValue value) |  |
| TuniversalChar getChar  (in Tinteger position) | void tciGetUCStringCharValue  (Value inst, unsigned long int position,  TciUCValue result) |  |
| void setChar  (in Tinteger position,  in TuniversalChar value) | void tciSetUCStringCharValue  (Value inst,  unsigned long int position,  TciUCValue value) |  |
| Tinteger getLength() | unsigned long int tciGetUCStringLength(Value inst) |  |
| void setLength(in Tinteger len) | void tciSetUCStringLength  (Value inst,  unsigned long int len) |  |
| BitstringValue | | |
| Tstring getString() | String tciGetBStringValue(Value inst) |  |
| void setString(in Tstring value) | void tciSetBStringValue  (Value inst, String value) |  |
| Tchar getBit (in integer position) | int tciGetBStringBitValue  (Value inst, long int position) |  |
| void setBit  (in Tinteger position,  in Tinteger value) | void tciSetBStringBitValue  (Value inst,  unsigned long int position,  int value) |  |
| Tinteger getLength() | unsigned long int tciGetBStringLength(Value inst) |  |
| void setLength(in Tinteger len) | void tciSetBStringLength  (Value inst,  long int len) |  |
| TBoolean isMatchingAt(in TInteger position) | Boolean tciIsBStringMatchingAt(Value inst, unsigned long int position) |  |
| MatchingMechanism getMatchingAt(in TInteger position) | Value tciGetBStringMatchingAt(Value inst, unsigned long int position) |  |
| void setMatching(in TInteger position, in MatchingMechanism template) | void tciSetBStringMatchingAt(Value inst, unsigned long int position, Value template) |  |
| HexstringValue | | |
| Tstring getString() | String tciGetHStringValue(Value inst) |  |
| void setString(in Tstring value) | void tciSetHStringValue  (Value inst, String value) |  |
| Tchar getHex (in Tinteger position) | int tciGetHStringHexValue  (Value inst, unsigned long int position) |  |
| void setBit  (in Tinteger position,  in Tinteger value) | void tciSetHStringHexValue  (Value inst,  unsigned long int position,  int value) |  |
| Tinteger getLength() | long int tciGetHStringLength(Value inst) |  |
| void setLength(in Tinteger len) | void tciSetHStringLength  (Value inst,  unsigned long int len) |  |
| TBoolean isMatchingAt(in TInteger position) | Boolean tciIsHStringMatchingAt(Value inst, unsigned long int position) |  |
| MatchingMechanism getMatchingAt(in TInteger position) | Value tciGetHStringMatchingAt(Value inst, unsigned long int position) |  |
| void setMatching(in TInteger position, in MatchingMechanism template) | void tciSetHStringMatchingAt(Value inst, unsigned long int position, Value template) |  |
| OctetstringValue | | |
| Tstring getString() | String tciGetOStringValue(Value inst) |  |
| void setString(in Tstring value) | void tciSetOStringValue  (Value inst, String value) |  |
| Tchar getOctet(in Tinteger position) | int tciGetOStringOctetValue  (Value inst, unsigned long int position) |  |
| void setOctet  (in Tinteger position,  in Tinteger value) | void tciSetOStringOctetValue  (Value inst,  unsigned long int position,  int value) |  |
| Tinteger getLength() | unsigned long int tciGetOStringLength(Value inst) |  |
| void setLength(in Tinteger len) | void tciSetOStringLength  (Value inst,  unsigned long int len) |  |
| TBoolean isMatchingAt(in TInteger position) | Boolean tciIsOStringMatchingAt(Value inst, unsigned long int position) |  |
| MatchingMechanism getMatchingAt(in TInteger position) | Value tciGetOStringMatchingAt(Value inst, unsigned long int position) |  |
| void setMatching(in TInteger position, in MatchingMechanism template) | void tciSetOStringMatchingAt(Value inst, unsigned long int position, Value template) |  |
| RecordValue | | |
| Value getField(in Tstring fieldName int) | Value tciGetRecFieldValue  (Value inst,  String fieldName int) |  |
| void setField  (in Tstring fieldName int,  in Value value) | void tciSetRecFieldValue  (Value inst,  String fieldName int,  Value value) |  |
| Tstring[] getFieldNames() | char\*\* tciGetRecFieldNames(Value inst) | Returns a NULL‑terminated array of the field names. |
| void setFieldOmitted  (in Tstring fieldName int) | void setFieldOmitted  (Value inst,  String fieldName int) |  |
| RecordOfValue | | |
| Value getField(in Tinteger position) | Value tciGetRecOfFieldValue  (Value inst,  unsigned long int position) |  |
| void setField  (in Tinteger position,  in Value value) | void tciSetRecOfFieldValue  (Value inst,  unsigned long int position,  Value value) |  |
| void appendField(in Value value) | void tciAppendRecOfFieldValue  (Value inst,  Value value) |  |
| Type getElementType() | Type tciGetRecOfElementType(Value inst) |  |
| Tinteger getLength() | unsigned long int tciGetRecOfLength(Value inst) |  |
| void setLength(in Tinteger len) | void tciSetRecOfLength  (Value inst,  unsigned long int len) |  |
| Tinteger getOffset() | unsigned long int tciGetOffset(Value inst) |  |
| TInteger getPermutationCount() | unsigned long int tciGetPermutationCount(Value inst) |  |
| Permutation getPermutation(TInteger index) | TciPermutation tciGetPermutation(Value inst, unsigned long int index) |  |
| void definePermutation(Permutation permutation) | void tciDefinePermutation(Value inst, TciPermutation permutation) |  |
| void removePermutation(TInteger index) | void tciRemovePermutation(Value intst, unsigned long int index) |  |
| void clearPermutations() | void tciClearPermutations(Value inst) |  |
| UnionValue | | |
| Value getVariant  (in Tstring variantName) | Value tciGetUnionVariant  (Value inst,  String variantName) |  |
| void setVariant  (in Tstring variantName,  in Value value) | void tciSetUnionVariant  (Value inst,  String variantName,  Value value) |  |
| Tstring getPresentVariantName() | String tciGetUnionPresentVariantName  (Value inst) |  |
| Tstring[] getVariantNames() | char\*\* tciGetUnionVariantNames(Value inst) | Returns a NULL‑terminated array of the field names. |
| EnumeratedValue | | |
| Tstring getEnum() | String tciGetEnumValue(Value inst) |  |
| void setEnum(in Tstring enumValue) | void tciSetEnumValue  (Value inst,  String enumValue) |  |
| Tinteger getInt() | unsigned long tciGetEnumInt(Value inst); |  |
| setInt(in Tinteger intValue) | void tciSetEnumInt(Value inst, unsigned long intValue); |  |
| VerdictValue | | |
| Tinteger getVerdict() | int tciGetVerdictValue(Value inst) |  |
| void setVerdict(in Tinteger verdict) | void tciSetVerdictValue(Value inst, int verdict) |  |
| AddressValue | | |
| Value getAddress() | Value tciGetAddressValue(Value inst) |  |
| void setAddress(in Value value) | void tciSetAddressValue(Value inst, Value value) |  |
| **MatchingMechanism** | | |
| TciMatchingTypeType getMatchingType() | TciMatchingTypeType tciGetMatchingType(Value inst) |  |
| **MatchingList** | | |
| TInteger size() | unsigned long int tciGetMatchingListSize(Value inst) |  |
| Value get(TInteger position) | Value tciGetMatchingListItem(Value inst, unsigned long int position) |  |
| void add(Value item) | void tciAddMatchingListItem(Value inst, Value item) |  |
| void remove(TInteger position) | void tciRemoveMatchingListItem(Value inst, unsigned long int position) |  |
| void clear() | void tciClearMatchingList(Value inst) |  |
| **ValueRange** | | |
| RangeBoundary getLowerBoundary() | TciRangeBoundary tciGetLowerRangeBoundary(Value inst) |  |
| RangeBoundary getUpperBoundary() | TciRangeBoundary tciGetUpperRangeBoundary(Value inst) |  |
| void setLowerBoundary (RangeBoundary lowerBoundary) | void setLowerRangeBoundary(Value inst, TciRangeBoundary lowerBoundary) |  |
| void setUpperBoundary (RangeBoundary upperBoundary) | void setUpperRangeBoundary(Value inst, TciRangeBoundary upperBoundary) |  |
| **CharacterPattern** | | |
| Value getPatternString () | Value tciGetPatternString(Value inst) |  |
| void setPatternString(Value characterPattern) | void tciSetPatternString(Value inst, Value characterPattern) |  |
| **MatchDecodedContent** | | |
| Value getContent() | Value tciGetDecodedMatchContent(Value inst) |  |
| void setContent(Value content) | void tciSetDecodedMatchContent(Value inst, Value content) |  |