

## C/C++ Software exercise

Create a TSIP parser to obtain valid data when reading from a serial port. Use the following supporting functions (do not implement them):

```
/**
 * \brief Read received raw data from COM port.
 *
 * This is a non-blocking read function. This means that only available received
 * data will be served. User may decide to call this function within a loop
 * until the desired amount of data is received.
 *
 * \param buffer Pointer to destination buffer where to copy received raw data.
 * \param count Maximum number of bytes to be read.
 * \return Number of read bytes. This value will always be <= count.
 */
int32_t uavnComRead(uint8_t * const buffer, const uint32_t count);

/**
 * \brief Process valid data at application level.
 *
 * \param[in] buffer Const pointer where valid data is located. Valid data consists of ID1 + ID2
 * + Data
 * \param[in] numberOfBytes It is filled with the number bytes.
 */
void ProcessValidData(const uint8_t * const buffer, const int32_t numberOfBytes);

/**
 * \brief CRC32 calculation. No CRC check is performed.
 *
 * \param buffer Pointer to buffer containing data to process.
 * \param start Offset value of first data byte (within buffer) to be processed.
 * \param end Offset value of last data byte (within buffer) to be processed.
 * \return Calculated CRC value.
 */
uint32_t crc32(const uint8_t * const buffer, const uint32_t start, const uint32_t end);
```

Use the function *uavnComRead* to read raw data from a serial port. Once a valid TSIP packet has been extracted from the raw data read, use the function *ProcessValidData* to send the valid data to the application.

Pay attention to the following aspects:

- Attached ExtendedTSIPPacketFormat.pdf file containing TSIP protocol description.
- Attached CRC32.pdf file as a reference of how crc32 is implemented.
  - o Remember that the valid data returned to the application must not contain any CRC. It must be checked and removed before.

Please document any assumption in the solution (maximum packet sizes, ...)