# Assigment 3

## Contents

Question 1:

$$H_0 : BMI_{\text{active-screen}} = 17.6$$

The null hypothesis predicts that the BMI of school-age children who have a typical daily screentime of more than 6h will not differ from the 'normal' midpoint for school-age children.

$$H_A : BMI_{\text{active-screen}} > 17.6$$

The alternative hypothesis predicts that the BMI of school-age children who have a typical daily screentime of more than 6h will above the 'normal' midpoint for school-age children.

Question 2:

The assumptions that the groups are independent is upheld because each individual has a typical daily screentime of more than 6h or not.

Since the sample size is small, it is very important that the data come from a normal, Gaussian distribution bell curve.

```r
# Load necessary libraries
library(dplyr)
library(ggplot2)

# Read the CSV file (replace with actual file path)
data <- read.csv("D:/work/stats-test/hypothesis testing/case-study/problem2(BMI for child with screening

# Filter the data to children with more than 6 hours of screen time
group_high_screen <- data %>%
  filter(screen > 6)

# Shapiro-Wilk test for normality
shapiro.test(group_high_screen$BMI)
```

```
##
##  Shapiro-Wilk normality test
##
## data:  group_high_screen$BMI
## W = 0.92308, p-value = 0.4633
```

Since p-value is greater than 0.05, the data to children with more than 6 hours of screen time is normally distributed.

Question 3:

```r
# Load necessary libraries
library(dplyr)

# Read the dataset
data <- read.csv("D:/work/stats-test/hypothesis testing/case-study/problem2(BMI for child with screening

# Filter the data to children with more than 6 hours of screen time
group_high_screen <- data %>%
  filter(screen > 6)

# Conduct one-sample t-test
t_test_result <- t.test(group_high_screen$BMI, mu = 17.6, alternative = "greater")

# Display the result
t_test_result
```

```
##
##  One Sample t-test
##
## data:  group_high_screen$BMI
## t = -2.2188, df = 2, p-value = 0.9216
## alternative hypothesis: true mean is greater than 17.6
## 95 percent confidence interval:
##  16.98239       Inf
## sample estimates:
## mean of x
##  17.33333
```